Town of Dunstable Massachusetts

Open Space & Recreation Plan 2010-2017

OPEN SPACE and RECREATION PLAN DUNSTABLE, MASSACHUSETTS

2010

Update of the 2005 Dunstable Open Space and Recreation Plan

Prepared by the Dunstable Conservation Commission

Acknowledgement

This plan is an update of the 2005 Open Space and Recreation Plan (updated with the help of Al Futterman and James DeNormandie of the Nashua River Watershed Association) which was based on the 1998 plan by Liz Fletcher, Planner, with the original Open Space and Recreation Plan completed by Alfred Lima of the Environmental Collaborative. The Town of Dunstable has benefited from the continued service of some dedicated people who greatly care for the town and the direction in which it grows. The Dunstable Conservation Commission is grateful to all of its members and to the all town boards for their hard work in helping with this update. The combined efforts help to bring the goals set out in this plan to fruition.

Conservation Commission

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Pictures supplied by: Leah Basbanes

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Plan Summary

SECTION 1 - PLAN SUMMARY

The Town of Dunstable seeks to advance sustainable land use practices, preserve its rural character and bring forth into the future as much as possible the potential of its New England agrarian landscape. Dunstable's timeless tapestry is made up of farm fields, forested hills, wetlands, along with period houses and barns fronting on winding stone-walled, tree-lined roads. This forms the very fabric of the town's nature and manifests its potential. The vision of this 2010 Open Space and Recreation Plan update is that Dunstable can grow within this tapestry, thereby saving its essential elements while accommodating well-planned development done in a manner that respects the town's natural and historical environment. To accomplish this delicate balance, conservation of open space must be a high priority. The quality of life in Dunstable depends on pursuit of this vision.

A direct conservation goal of this plan is to preserve the outstanding scenic places and rural character of Dunstable by continuing to protect its sensitive environmental resources. This will require expansion of existing conservation lands and the linking of them into a comprehensive open space network. It is also necessary in order to protect the town's water resources, and to complete the Greenways along Dunstable's major streams.
These actions will enhance the opportunity to advance sustainable land use practices.

The primary recreation goal of this plan is to continue to pursue the acquisition of open space parcels. This should enhance the linkage of the town's system of trails for walking, cycling and horseback riding. It should also improve the recreational uses of water bodies.

Our plan sets forth the objectives by which to accomplish this vision and these goals. It includes an analysis of Dunstable's community setting and community needs, as well as an environmental analysis of the town's many natural resources. It also includes an inventory of lands for future of conservation and recreation interests. A seven-year action plan sets forth steps toward fulfilling these objectives.

Section 2
Introduction

SECTION 2 - INTRODUCTION

A. Statement of Purpose

This is the third update of Dunstable's original Open Space and Recreation Master Plan which was completed in February 1976 by Alfred Lima of the Environmental Collaborative of Cambridge, Mass. The latest plan update was 2005. For three decades, the 1976 plan has served the town well as a guide to the protection of Dunstable's natural resources. Many of its recommendations have been accomplished, as shown in the Appendix Record of Accomplishments. The 1976 plan has lasting quality. Some sections have been incorporated into this plan update. Its original goals are still worth striving for, and they are included here. Its environmental analysis has been included with few modifications, because its documentation of Dunstable's natural resources still holds true. Some of the original maps are relevant today. Many of the plan's original objectives have been modified to reflect present concerns, and new recommendations are made based on today's community needs.

This is a good time to renew Dunstable's open space and recreation planning efforts because of continued pressures of population growth and availability of large parcels of land. The completion of the town's Comprehensive Master Plan, state approved Affordable Housing Plan and Aquifer Protection Bylaw will help direct the town's efforts to acquire land and to direct the town's efforts toward obtaining resource protection, conservation and recreation needs.

The Open Space and Recreation Plan is intended as a guide for Dunstable's people to work together to protect the natural resources and cherished open spaces of their town for present and future generations. Planner Alfred J. Lima, in his dedication to the original 1976 Plan, said, "Few towns are more worthy of protection".

B. Planning Process

Dunstable citizens have long shared a concern about the vulnerability of the town's rural character to poorly designed land development. The 1976 Plan addressed this concern. In 1990, the town formed a Rural Design Study Committee with representatives from the Selectmen, Historical Commission, Conservation Commission, and Planning Board. They commissioned the planning firm IEP to do a Rural Landscape and Design Study and make recommendations for revisions to town regulations. The 1990 Rural Land Preservation Survey conducted as part of this study highlighted the strong desire of Dunstable's citizens to protect the rural character. 79% of the respondents expressed willingness to invest tax dollars to protect the town's natural, scenic, and historic resources. The community survey conducted in 1998 for the Master Plan showed a similar affection for the town. Of those surveyed: 75% live in Dunstable because of its "rustic charm and character", its small community sense with a diversity of conservation land, environmental awareness, and diversity of wildlife and habitats. Additionally, the survey showed that 57% of the survey participants are interested in trails for biking/walking/horseback riding, 14% interested in track/athletic/fitness trails, and 8% interested in swimming and water access areas.

Our current planning process will benefit from our recent successes (2005-2010): Adoption of the Community Preservation Act (2006), purchase of the Flat Rock Hill Conservation Area (part of the Ferrari Farm), improved entrance to the Arched Bridge Conservation land on High Street, improved entrance to and hilltop clearing of Blanchard Hill, continued forest management and tree cutting of several Conservation owned parcels, development of a Forest Management Plan for the Flat Rock Hill Conservation Area, trail development on the Flat Rock Hill Conservation Area, work with Massachusetts Fish and Wildlife and Natural Heritage on new monitoring and mitigation of high risk turtle crossings in town, and the most recent purchase of the Carter property (Howard's Brook Conservation Area).

C. Public Participation

A 2010 Open Space and Recreation survey was delivered to each Dunstable household in early May. Residents had the opportunity to drop their completed surveys off at the Annual Town Meeting on May 10th. A reminder that surveys must be returned to the Town Hall by mid July was also published in our local paper, "The Neighbor to Neighbor". The survey is reprinted below.

Open Space and Recreation Survey

The Conservation Commission is in the process of updating our **Open Space and Recreation Plan** for Dunstable in order to qualify the Town for state funding of land purchases. This plan was last updated in 2005 and addresses various issues relative to recreation and open space.

Part of the plan includes a public survey in order to understand the needs and concerns of our residents in regard to open space/recreation. Open space can be defined as any undeveloped land which may have a scenic, historic, conservation or recreation interest.

Please complete the survey so your voice will be heard. You may return the survey in any of the following ways: **drop it off at the Annual Town Meeting on May 10th**, drop it off at the Town Hall downstairs at the Conservation Commission office (Monday-Thursday 7:30am-3:00pm), mail the survey to: Conservation Commission, 511 Main Street, Dunstable, MA 01827, or e-mail the survey to: CMann@dunstable-ma.gov. Results of this survey will be incorporated into our 2011-2018 plan.

How long have you lived in Dunstable?

0 - 5 years	6 – 10 years	11 - 15 years	16 - 20 years	21 + years

How many people in your household does this questionnaire represent? _____
What age groups are represented?

0-5yrs.	6-10yrs.	11-15yrs.	16-20yrs.	21-30yrs.	31-40yrs.	41-50ys.	51-60 yrs.	Over 60

How often do you visit or use conservation land?

Weekly	Monthly	Few times a year	Never	Activities you use Conservation land for

How important to you are the following?

	High Priority	Medium Priority	Low Priority	Not Needed
Preserving rivers, ponds, streams, wetlands				
Preserving agricultural land				
Preserving scenic areas and views				
Preserving & maintaining historic features				
Preserving & enhancing wildlife habitats				
Preserving & enhancing lands surrounding water supplies, well & aquifers				
Providing adequate recreation facilities				
Providing access to open space land and trails.				

Do you feel Dunstable has an adequate number of:

	Highly Agree	Disagree	Explain if you disagree
Playgrounds			
Playing fields			
Hiking/walking trails			
Basketball or tennis courts			
Wildlife areas			
Horseback riding areas			
Fishing areas			
Biking trails			
General town parks			

Are there facilities you would like to see the Town build or activities you would like to see the Town sponsor (i.e. football field, children's play areas, basketball courts, family picnic areas, ice skating rink, dog exercise areas, horseback riding rings, public access for boating/swimming) Please list.

_____ _____ _____

Should the Town of Dunstable continue to acquire land for conservation or recreation purposes?

	Strongly Agree	Somewhat Agree	Disagree	No Opinion
Conservation				
Recreation				

How could existing conservation and recreation areas be improved?

	High Priority	Medium Priority	Low Priority	Not Important
Better signage/ marked trails.				
Better parking				
Cleaner properties/ trash barrels/doggie waste bags				
Connect trails/properties				
More walking trails				
Maps of Conservation properties				
Invasive plant control				

To preserve land in Dunstable would you be willing to:

	Yes	No
Donate land to the Town		
Donate money to purchase land		
Sell land to the Town at below market value		
Limit use of your land through a conservation restriction to protect your land from future development		
Continue the Community Preservation Act after 5 year Expiration – with maximum 3% surcharge		
Vote for Town supported land acquisition if it means not raising taxes.		

What specific areas in Town do you feel are unique to Dunstable and need protection?

_____

_____

_____

Additional Comments:

_____

_____

Section 3
Community Setting

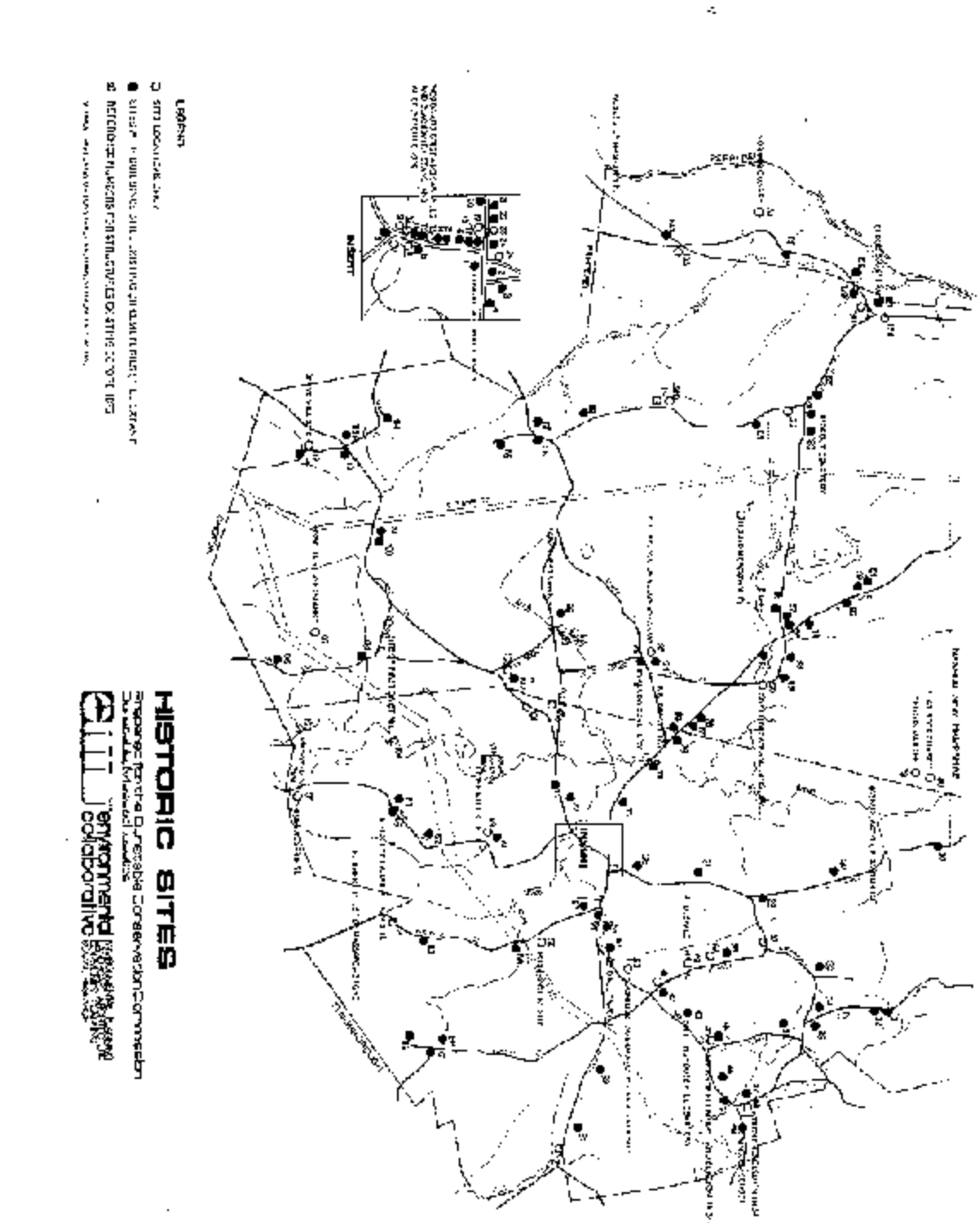
SECTION 3 - COMMUNITY SETTING

Regional Context

Dunstable lies at the eastern edge of the central New England upland. In common with the surrounding regional landscape, the town shows a characteristic combination of hilly and poorly drained glaciated terrain, with drumlins, outwash deposits, streams, and ponds that are the remnants of the glacial meltwaters. It shares water resources with surrounding towns, most notably Massapoag Pond with Groton and Tyngsborough. Its aquifers are shared with its neighbors, such as the Salmon Brook aquifer with Groton, Tyngsborough, and Nashua, and the Unkety Brook aquifer with Pepperell. As an upland town, much of Dunstable is a source of water to its neighbors: Salmon Brook, Dunstable's central waterway, drains into Nashua, NH, and the eastern quarter of the town drains into Locust and Flint Ponds in Tyngsborough. Yet Dunstable's three major streams — Salmon and Unkety Brooks, and the Nashua River — all receive drainage from outside the town, and land development in these watersheds could influence the town's water quality. On Dunstable's western border, the Nashua River drains nearly 500 square miles. Dunstable contributes to the Nashua River as well through Unkety Brook, whose watershed includes the western quarter of the town.

As one of the 31 towns of the Nashua River watershed, Dunstable is a key cornerstone of this watershed's open space wedge. The Nashua River watershed is still a largely rural landscape lying between the metropolitan areas of Nashua on the north, Worcester on the south, and Fitchburg-Gardner-Leominster on the west. As a town whose character remains rural, Dunstable forms the northeast corner of the Nashua Valley's open space network. Lying between the urban centers of Nashua, NH, and Lowell, Dunstable remains a rural oasis thanks to the many active farms and managed forest areas in the community, and to the continuing efforts of the town's Conservation Commission and conservation land trust, the Dunstable Rural Land Trust. Now having an ACEC designation, (the Petapawag), for the lands west of Salmon Brook, further emphasis is given to the natural, agricultural and historic features that characterize Dunstable.

However, Dunstable has not escaped impacts from urbanization in its neighbors. Most obvious is the development of south Nashua as a regional commercial center, with its Pheasant Lane Mall, and numerous large "chain" retail stores. Traffic on Dunstable's Main Street has increased very noticeably since the Mall opened. The narrower winding side roads leading to Nashua also experience a heavy burden of increased traffic. The demand for "affordable housing" under the Comprehensive Permit Law, Massachusetts Chapter 40B**,** is bearing down hard on the town and may force development in a town with but very limited infrastructure. Residential development in Dunstable is likely fueled by job opportunities in surrounding metropolitan areas. The widening of Route 3 has so-called "eased" the traffic issue on the highway thereby making the smaller peripheral towns like Dunstable ever more inviting as "home" from which to commute. With very few jobs in the town, the average employed Dunstable resident commutes to a job 30-60 minutes away.


HISTORIC SITES

History of the Community

Dunstable's history is that of the classical transition from a self-sufficient farming community to its present metropolitan economic inter-dependence. The historic economic base of Dunstable has been farming, with related activities such as timbering and wood milling. In the past five decades, with the general decline of farming activity, the town has become more closely tied to the economic growth of the nearby urban areas of Nashua and Lowell and enterprises located along the I-495 and Route 3 corridors. Much of its residential growth during this time has likely occurred as a result of those regional job growths.

The first human inhabitants of the area — the native Americans — lived almost exclusively off the land through hunting, fishing, gathering wild fruits, and cultivating corn, beans, and squash. The first European settlers brought with them technologies that enabled them to use the land and its resources more intensively than the Native Americans. One of Dunstable's early economic activities was the bleeding of pine trees for pitch and turpentine, which was one of the town's first exports and sources of revenue. Bog iron ore was also extracted from the town's swamps and sent to Chelmsford for processing. Peat and clay for bricks were also early extracted natural resources.

For the most part, however, the town was a nearly self-sufficient economic entity, with agriculture as its economic base and principal export product. Elias Nason's history of Dunstable lists the primary agricultural products in 1873 as hay, corn, oats, rye, barley, potatoes, vegetables, fruit, and harvesting of forest products. Hay and grain were food sources for the dairy farms, other grains were processed into flour in the town's grist mills; vegetables were used for domestic production and also exported, as were fruit from the town's orchards. The town's sawmills processed local logs, stave mills manufactured barrels for agricultural products and by-products, and its blacksmith and wheelwright shops assured that there was necessary transportation to bring the produce to market. To use modern economic jargon, the agricultural economy of Dunstable was fully "integrated."

In 1873 there were 90 farms in Dunstable. The map of historic sites shows the structures existing at that time and other significant landmarks. A full list of structures is given in the Appendix. One of these landmarks is the birthplace of Ellen Swallow, one of America's first environmental activists. Her scientific efforts led to the development of the three main environmental sciences: ecology, limnology, and euthenics. She opened the world's first Sanitary Science Laboratory of its kind at M.I.T. in 1884, was that university's first woman faculty member, and was the founder of the American Economics Association and the American Association of University Women. She is often referred to as "America's First Lady of Science."

Dunstable's 1976 Open Space and Recreation Master Plan found that the town's historical era of being an agricultural economy was giving way to physical integration into the Lowell/ Nashua metropolitan land use pattern. The 1976 Plan stated that the town had three alternatives before it: it could become totally suburbanized in single-family residences; it could purchase land and

preserve it as public open space and resource conservation; or it could encourage and help reserve economic uses which keep the land in private ownership yet open (primarily in agricultural and forestry uses). The 1976 Plan predicted that the degree to which Dunstable became as heavily suburbanized as neighboring towns would depend to a great extent on encouraging local economic uses of land which would lessen the pressures on private land owners to sell. The years of history that have passed since then have shown that the people of Dunstable, by pursuing the two alternatives of open space conservation and economic uses of private open lands, have experienced a relatively gradual pace of suburbanization that has allowed the town's rural character to remain essentially viable.

Dunstable has some farms with more than 2,222 acres classified under Chapter 61A. Although not all these acres are actively farmed, this classification means that the land must provide a yearly minimum economic return from agriculture. Another 884 acres are classified as managed forest under Chapter 61. Although these special property tax classifications do not serve as permanent open space conservation measures, their prevalence indicates that many Dunstable landowners have intentions of carrying on farming and forestry for the long term.

Over the past three decades, Dunstable's conservationists have been active as well. At the time of the 1976 Plan, the town had only 341 acres of conservation and town forest land. Now in 2010, Dunstable has 2,763+/- acres of land, owned by the Town, DRLT, State or in APR, that is presently "open" or permanently protected for conservation, recreation, town use and agriculture. Also there are 3,150 acres held in Chapter 61, 61A, and 61B providing temporary protection to undeveloped lands. Many unprotected gaps remain in the network of resources that need protection, but great progress has been made through continued efforts of Dunstable's Conservation Commission, Planning Board, and the Dunstable Rural Lands Trust, the community's private citizen conservation group.

Population Characteristics

Population Growth and Density: The most recent population count of 3,221 is from the Town Clerk's office (2010). Dealing with the needs of a continually growing population is an ongoing concern of the town. According to the Northern Middlesex Council Of Government's Transportation Plan for the Northern Middlesex Region 2000-2025, Dunstable's population by 2025 could be 4,403 with 1,893 households.

Year	Population	Increase	Year	Population	Increase	Year	Population	Increase
1950	522		1980	1,671	379	2002	3062	544
1960	824	302	1990	2,236	565	2004	3,162	100
1970	1,292	468	1995	2,518	282	2010	3,221	59

Dunstable's population density 2002: 182.92 people per square mile
Dunstable's population density 2004: 188.88 people per square mile
Dunstable's population density 2010: 195.21 people per square mile
State population density 2000: 809.80 people per square mile

As a rural town, Dunstable's population density is significantly lower than that of the state as a whole. The town center is an area of somewhat denser population, yet its character is still that of a rural village. Most of Dunstable's population is dispersed throughout the town's area.

Age and Income Distribution: Dunstable's population is comparatively young, with a higher proportion of children and a lower proportion of senior citizens. Dunstable's larger household size than the state average would indicate that the town has a sizable proportion of families with children. Such a population would tend to have needs for more active recreation facilities such as tot lots and ball fields. These demographics would indicate a need for after-school programs and supervised recreational activities for the town's children.

Age Distribution/household
Taken from www.city-data.com 2008 website.

Median Dunstable resident age: 37.3
Massachusetts median age: 36.5

Average Dunstable household size: 3.1 people
Average Massachusetts household size: 2.5 people

Percentage of family households in Dunstable: 86.5%
Percentage of family households in Massachusetts: 64.5%

Dunstable enjoys a much lower poverty level and significantly higher household incomes than the state average. Among its seven neighboring towns, Dunstable ranks one of the highest in median family income and house value.

Income Distribution (www.city-data.com from 2008)
Estimated median household income in 2008: $111,390 (it was $86,633 in 2000)
Estimated median household income Massachusetts in 2008: $65,401

Dunstable poverty level:	1.9%
State poverty leve1:	9.3%

Regional Housing Value (www.city-data.com from 2008)

Town	Median House Value	Tax Rate
Dunstable	$470,681	$13.79
Massachusetts	$353,600	

Sources of Income (www.city-data.com from 2008)

Most Common Industries	Males	Females
Computer & electronic products	16%	6%
Construction	12%	-
Professional, scientific & technical	9%	10%
Finance & insurance	4%	7%
Public administration	4%	5%
Publishing, motion picture, sound	4%	-
Health care	-	20%
Educational services	-	16%
Accommodation & food services	-	9%

Economy: There are 1,018 households and 1,770 (2008-mass.gov website) people employed. Most of these workers are employed outside the town. Workers finding employment in town find jobs in the agricultural and public sectors (local government and school district) as well as being self-employed. With an average commute of thirty minutes to an hour, most employed Dunstable residents work in various regional employment centers: Nashua, NH, the Lowell area, other parts of the Route 495 region as well as Burlington or Boston. In keeping with the relative vigor of the region's economy, Dunstable's unemployment rate (5.6% -2009 mass.gov website) is lower than the state level (8.4%). To provide for some business growth in the town, Dunstable has established an Expanded Commercial Zone on its eastern boundary, abutting a similar zone in Tyngsborough near the Route 3 and Route 113 intersection in that town. This zone comprises 140 acres, which could potentially be developed into numerous enterprises (light manufacturing, offices, research labs) on 100,000 square foot lots (2.3 acres). However, nearly one-quarter of this zone may be wetlands, and its soils are generally hardpan types, limiting the land's ability to absorb large quantities of wastewater. When developing this zone, great caution will be required to prevent water pollution. Most of this zone's land is now classified under Chapter 61 and 61A, forest management and agriculture.

Employment of Dunstable Residents

Type of Employment (www.city-data.com from 2008)

Managers & professionals	Computer Specialists
Teachers	Registered Nurses
Sales	Business Operations Specialists
Engineers	Other Office Staff, including Supervisors
Secretaries	Executives

Housing Breakdown by Occupancy (www.city-data.com from 2008)

TOTAL HOUSING UNITS		% of Total
Total Occupied Units	923	
Owner Occupied	862	93.4
Renter Occupied	61	6.6

Commuting to Work (www.city-data.com from 2008)

	from Dunstable	in Massachusetts
Drove alone	93%	76%
Carpools	6%	9%
Other	1%	3%
Bus		3%
Public transportation		4%
Walk		4%
Average travel time to work	30-60 minutes	

Growth and Development Patterns

Patterns and Trends

Although its agricultural roots are still thriving, Dunstable is facing suburbanization as residential growth continues to increase. Other than very limited area that has been zoned for commercial uses, the vast majority of the town is zoned single family residential with 2-acre lots. This is the form of development that will have the greatest influence on Dunstable's future.

As a look at the typical suburban town shows, the conventional legal tools used to control the quality and density of development have not prevented this development from transforming many handsome New England towns into monotonous enclaves without any distinguishing character. Large lot zoning or any of the other traditional land use controls will not necessarily save Dunstable from this fate.

Age of Housing Stock

The age of the overall housing stock in Dunstable is 21-30 years, based on the city-data website. Although recent housing has slowed as shown below, there has been steady interest in new development over the past several decades and further demonstrates that Dunstable is poised for high levels of residential development in the coming years. Despite the fact that the vast majority of houses were built after 1970, Dunstable does have close to 150 houses built prior to 1939. These older homes represent a significant resource for the community as they contribute to the rural New England character that makes Dunstable an attractive community.

The following table shows Dunstable's residential building trends in the past (information received from previous Open Space and Recreation report and the Assessor's office).

1970's	House permits issued:	153
1980's	House permits issued:	220
1990-1995	House permits issued:	151
1996-2000	House permits issued:	149
2001-2005	House permits issued:	98
2006-2010	House permits issued:	20

Although forest is by far the largest land use in Dunstable, it is decreasing as residential acreage grows. Agriculture is the second largest land use, and most of this land is enrolled in Chapter 61A. It is heartening to note that conservation and recreation form Dunstable's third largest land use with roughly 20% of the town's area. Yet this is small compared to other towns in the region such as Townsend, which has nearly one-third of its area in conservation. Many critical natural areas remain unprotected.

Dunstable

Total area of Dunstable: 16.74 square miles or 10,704 acres

Infrastructure

Information sources: North Middlesex Council of Governments, Dunstable Water Department, Board of Health, and Affordable Housing Plan

Public Water System:

Dunstable has a limited centralized public water supply with 102 connections. The majority of these connections are to residential properties. However, the elementary school, municipal facilities (fire station, police, library, post office, Town Hall, etc.),and a small assortment of commercial type properties are also connected to the system. The wellhead for this supply is the Salmon Brook Gravel Packed Well (DEP #2081000-02G & 03G).The Zone 2 for this water supply covers just over 440 acres in the central part of the Town. This wellhead has the capacity to provide 360,000 gallons per day (gpd), but currently supplies approximately 40,000 gpd. In accordance with state regulations, a backup well for the Salmon Brook public water supply was installed. This well was designed to pump 360,000 gpd at capacity. The majority of Dunstable is served by private on-site wells. One existing problem in Dunstable that has not yet been adequately addressed is the inadequacy of the existing fire hydrant system. Only a small portion of the Town actually has fire hydrants and these would not be able to supply adequate volumes of water in case of an emergency. Dunstable would still be reliant on tank trucks to adequately handle a fire emergency. To address this problem, and to potentially prepare for other areas of development, the Town has identified a site that may be feasible for constructing a water tower. Although the actual construction of this tower could be several years away, discussions with the Water Commission suggest that a 300,000-gallon capacity system may be adequate to accommodate the future needs of the community.

Wastewater Treatment: There is no public sewer system in Dunstable. All wastewater treatment is done through onsite septic systems. Most 2-acre lots must provide their own water source and their own wastewater treatment onsite. Careful siting, installation, and maintenance of septic systems is essential to protect water quality. There is no other treatment option readily available. The Dunstable Board of Health has local regulations in place that go far beyond Title V, which better protects the town resources and public health.

Solid Waste Disposal: Dunstable has a trash transfer station and recycling drop off facility. This operation is located at the now-closed landfill site on Depot Street.

Transportation: Dunstable is entirely dependent on its road network and private cars. The relatively high number of cars per household (most households have 2-3 vehicles) testifies to this dependence. This car-dependent system of transportation leads to a dispersed pattern of development. No bus service is available in the town. Commuter rail service to Boston is available in Lowell, with 700 MBTA parking spaces. Route 113 (Pleasant and Main Street) is Dunstable's major artery, extending across the town from west to east. It connects in neighboring Tyngsborough, Pepperell and Groton with Route 3, the heavily traveled north-south highway.

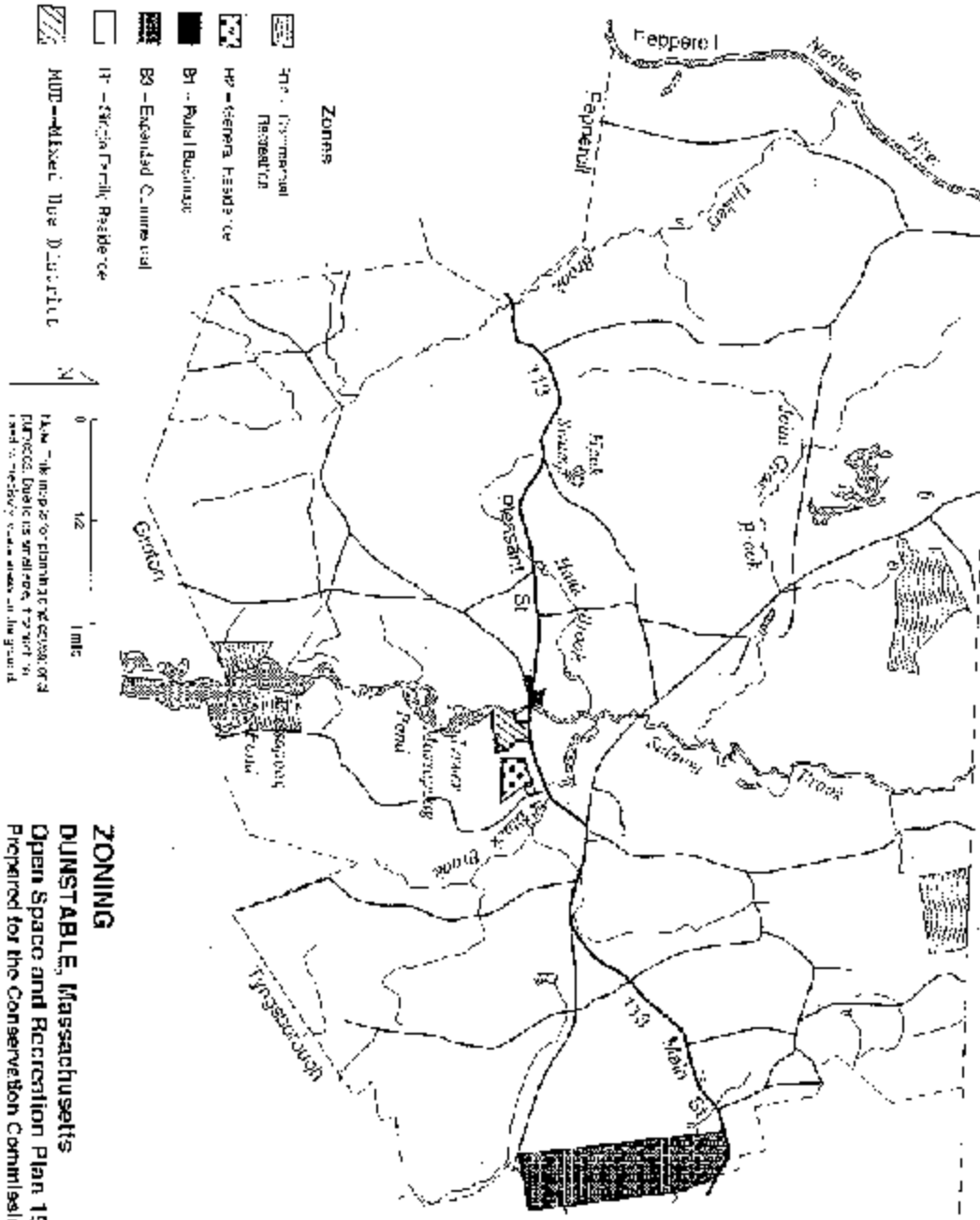
Traffic on Route 113 has increased very noticeably since the Pheasant Lane Mall opened in south Nashua, NH, just off Route 3 and towns to the west have grown greatly. Nashua has also become a center for several large “chain” retail stores. The widening of Route 3, in 2005, increased the convenience of travel to Nashua, with traffic often using Dunstable’s side roads as a cut-through. Traffic counts done in 2007/2008 by the Northern Middlesex Council of Governments (Regional Traffic Volume Report: 2008 Edition) show that two particular areas on Route 113 were number 3 & 4 in rank of the highest traffic volume areas. A traffic study done in the early 2000’s counted 10,000+/- cars commuting on Rte. 113 each morning and evening.

The narrow, winding nature of Dunstable's roads is an integral part of the town's rural character. This has been recognized through the town's designation of all its roads (except Route 113, a state highway) as Scenic Roads. Route 113 from the town center to the Tyngsborough line is also a very scenic road, with its stone walls, large shade trees, and vistas of fields, farms, and woods. There is strong concern among townspeople about protecting this rural landscape along Route 113, the “Gateway to Dunstable”.

Dunstable has approximately 37.77 street miles in Town.

Long-term Development Patterns

In 1976, the Open Space and Recreation Plan noted that suburbanization had only just begun. Thirty-four years later, with 1,018 households, Dunstable still retains much of its



ZONING

DUNSTABLE, Massachusetts

Open Space and Recreation Plan 1998

Prepared for the Conservation Commission

rural character due to a combination of several factors. Most owners of large land-holdings continue to retain their land in open space uses, assisted in part by reduced property taxes under the Chapter 61 programs (as of 2010 there are 115 parcels in Chapter 61, 61A & 61B); 2-acre zoning may have slowed the pace of development; and clustering is an option used by developers in Dunstable, which results in 35% of a project's land being kept in open space.

With 2-acre single-family zoning covering most of the town, Dunstable is programmed to become a suburban bedroom community. Without continuing efforts to increase Dunstable's protected open spaces, the town's rural character will gradually be lost, and the costs to serve a population without a commercial tax base would create a heavy burden of taxes. Although this process will likely take many decades, development of some highly visible rural landscapes such as those along Route 113, can cause the perceived loss of Dunstable's rural character to accelerate.

If fully built out as zoned, Dunstable would be almost five times more densely populated than it is today, with a density close to the state's present population density.

Zoning	**Approx. Acreage**	**Location**
R1 -- Single family	10,390	All over town
R1a -- Commercial Recreation	130	Massapoag Pond/Sky Meadow/Skytop Lane
R2 -- General Residence	16	Pond (multi-family) & Pleasant St.
B1 -- Retail Business	0	
B2 – Service Business	0	
B3 -- Expanded Commercial	140	Main St. to Blodgett St. on Tyng.line
MU—Mixed Use District	28	off Pleasant St. near the Post Office .

Estimate of Dunstable's Potential Build-Out

Estimated Population at build-out: nearly 11,300 people or 675 people per square mile, if each lot had an average-sized 3 person single-family household. The 1976 Open Space and Recreation Plan did a build-out scenario projecting that 4,012 more lots could be created under 2-acre zoning, after subtracting out the developed and public lands that existed at the time. Because 2,404 acres have been conserved since 1976, approximately 1,202 potential lots have been eliminated. This would account for the higher 1976 build-out figure, which gave Dunstable an ultimate total of about 4,462 lots when the 450 households that existed in 1976 are included.

On the whole, the two build-out scenarios are within a reasonable range of each other. They are presented to illustrate the ultimate outcome of 2-acre zoning if no further conservation of land

occurs. Land conservation, along with well-designed development controls, is a crucial tool for shaping the town's ultimate livability. Long before Dunstable reaches its buildout level, the costs of servicing the needs of a nearly entirely residential town would become quite burdensome. Conservation of significant natural and recreational lands would be a wise investment in the town's long-term well-being in many ways.

A sizable majority of townspeople are willing to make this investment, as shown by the over 75% affirmative responses to the 2010 survey's question on using Community Preservation funds to protect open space resources. With so many resources worthy of protection, that have benefits to the region beyond Dunstable's borders, this is a significant project deserving of support on a state-wide level.

The extensive network of wetlands throughout the town indicates that much acreage would be rendered unbuildable by wetlands. However, wetlands can be included within buildable lots. As suburbanization continues and increasingly marginal land is subdivided, more building lots would be likely to include wetlands and their buffers. This situation creates difficulties both for the wetlands and the homeowners. Actively used yards abutting wetlands would tend to increase the levels of nutrients reaching the wetlands and decrease the natural vegetation of the buffer area as fertilized lawns tend to extend to the edge of the wetland. And when wetlands do their natural function of water storage in spring runoff and floods, homeowners may be distressed as their yards become reclaimed by the wetlands. It would be best for all concerned to respect wetlands and their buffers by requiring sufficient upland in each lot for a home, a septic system, and a yard, while restricting structures from wetland buffers.

A significant amount of potential building remains in the pipeline. As of 2005, three subdivisions have been approved totaling approximately 41 lots. But these subdivision lots represent only a small part of the overall residential building picture in Dunstable.

Approval Not Required (ANR) lots account for about three-quarters of the home-building. ANR lots must be automatically approved by the Planning Board when they have the required 2 acres and 200 feet of frontage on an existing road. This gives planners little control over many development-related impacts.

Dunstable's development patterns during the past three decades have been quite dispersed. Five of the nine sizable subdivisions (10 or more lots) have taken place in the southern half of the town, but three subdivisions with a total of 56 lots are near the northern border, one with 57 lots is on the western border. The report done by the Board of Assessors for Dunstable's Master Plan shows that the northeast quadrant of the town has historically experienced the least building, while the central and southwest sections have had the most building. But given Dunstable's accessibility to nearby regional employment centers (Nashua, Lowell, and Route 495), all parts of town can be considered vulnerable to development pressure. The Comprehensive Permit Law, Massachusetts Chapter 40B**,** could potentially add residential development pressure on the town.

Much building will continue to occur under ANR, beyond the scope of planners. The high proportion of ANR building is likely to decrease over time as buildable road frontage diminishes, but this unplanned form of growth will continue to be a fragmenting force upon Dunstable's landscape for some time to come. The rural character of Dunstable's scenic roads is very vulnerable to suburbanizing pressure from ANR subdivisions. Given traditional influences upon the state legislature, it is unlikely that state law mandating ANR will be changed to allow municipalities to guide all of their future growth.

Cluster: The town can exert some guidance over development patterns through its cluster development bylaw (Open Space Development Regulation). Of the nine sizable subdivisions approved since 1974, seven have been cluster. It would appear that developers find Dunstable's bylaw a reasonable way to proceed, with its requirement for 35% of the tract area to be kept as permanent open space and its allowance for reduced lot sizes and frontages, with the total number of lots to be no more than could otherwise be developed considering the limitations of the land.

What do these trends mean for Dunstable's remaining open spaces? As it is now, cluster development cannot bring about a coherent assemblage of open spaces. Cluster is a good means to guide residential growth patterns to include some permanent open spaces. But much wildlife habitat, and some economic and recreational land uses need large contiguous blocks of open land. Cluster development alone cannot be counted on to provide sufficient open space for the town's future needs.

One way to improve cluster's potential to protect significant open spaces would be to allow up to half of a cluster's open space land requirement to be fulfilled through the conservation of valuable off-site parcels. Cluster developers could buy conservation restrictions or agricultural preservation restrictions from willing owners of significant open space parcels. This method was suggested by IEP, Inc. in its 1990 Rural Landscape and Design Study for the town. The nearby town of Hudson, NH has a similar provision in its cluster development bylaw.

Two commitments are required if Dunstable is to retain its rural character into the next century. Put forth in Dunstable's 1976 Open Space and Recreation Master Plan, and carried on well by townspeople over the past three decades, these are well worth affirming as continuing goals –

* a public and private commitment to conserve land as permanent open space, either through purchase or donations of land or conservation easements;
* and a community commitment to encourage local economic uses of existing open spaces through activities such as farming, forestry, and open space recreation.

It is one of the primary objectives of this plan to provide the analysis and recommend approaches to preserving the rural integrity of Dunstable while absorbing the inevitable growth. However, this plan is only part of the work that needs to be done. It is a part of a larger comprehensive planning process now ongoing to determine how Dunstable can grow in desired development

patterns. This process would analyze all of the demographic and economic forces at work within the region, supplemented with basic environmental information (wetlands, bedrock, water table, soils) to allow a definitive delineation of what areas are suitable or not suitable for residential development.

From this the Town can then construct a growth and development policy which has a sound rational economic and ecological basis, and which will be capable of withstanding court challenge of those zoning and subdivision regulations which are to implement that policy. This Open Space and Recreation Plan will be a substantial part of that comprehensive planning process.

Section 4
Environmental Inventory and Analysis

SECTION 4 – ENVIRONMENTAL INVENTORY AND ANALYSIS

The Importance of Environmental Resource Analysis

Effective resource conservation in Dunstable requires understanding the problem from two perspectives: (1) the need to protect from development fragile or significant environmental resources; and (2) the need to regulate those areas which will be developed so that development does not result in environmental degradation.

Before this can be done, however, each landscape element needs to be analyzed to determine its geologic history, physical structure, functional role in the landscape, and vulnerability to human activities in the environment. Only then can a rational plan be developed which can recommend the most appropriate protection approach for each resource.

The aim of this section of the Dunstable Open Space and Recreation Plan is to provide the logical basis or reasons for the open space acquisition and development control proposals of the plan. This reasoning is based on the fact that all landscape elements have what can be called a "range of tolerance" which, when exceeded, results in environmental deterioration.

Improper development thus reduces the value of the landscape as a human resource. It results in flooding, lost recreational potential because of pollution of surface waters, the drying up or pollution of ground water resources, the disappearance of scenic streams in culverts and the impoverishment of soils through erosion and siltation. The end result is often an ugly landscape lost of its capacity to modify or cleanse itself of human excesses. This environmental analysis hopes to explain that with proper planning and citizen action, the mistakes of other growing communities needn't be repeated in Dunstable.

Climate

Dunstable is situated in the northeastern regional pattern of prevailing west to east atmospheric flow. Due to the origination of storms in a northwest to southwest arc, there is a great variation of local precipitation and temperature. Local differences in topography, elevation and terrain type also contribute to this variation.

The normal annual precipitation in Dunstable is 43.34 inches; the mean January temperature is 26.7°F and mean July temperature is 73.6°F. Annual snowfall is 66.5 inches. The frost free season lasts about *5.5* months.

Geology, Soils, and Topography

Surficial Geology

An analysis of Dunstable's natural resources logically begins with its geologic history. The surficial geology of the Town, created during the last two glacial ice ages, has been decisive in determining land forms, soils, water course direction and characteristics, and even types of vegetation and wildlife. Its surficial geologic features are the result of the Pleistocene Ice Age which occurred 15 to 25,000 years ago. The receding glacier deposited drift of varying depths on the granite bedrock, and glacial streams and lakes deposited finer material carried in these melt waters. This area's geologic history has resulted in three major types of glacial deposits: (1) direct glacial till deposits, (2) glacial stream deposits, and (3) glacial lake Nashua deposits.

Direct Glacial Till Deposits

Till consists of an unsorted mixture of sand, gravel, silt and clay, deposited directly over bedrock by receding glaciers. In Dunstable, this till cover varies in thickness from 100 feet to only a thin layer over exposed bedrock.

The land forms created in Dunstable by till deposits are of two types. The western sector has scattered drumlins, or oblong hills, running from northwest to southeast, while in the eastern sector the deposits have resulted in a more massive topography of high rolling hills called ground moraine. The oblong form of the drumlins resulted from movement of the glaciers over bedrock exposures, with accompanying deposition of till material. The composition of till material within Dunstable may vary considerably. Without a soil survey supplemented by field investigation, no exact analysis of composition can be made. There is evidence from U.S. Geologic Survey data that the drumlins may be composed of less resistant phyllite bedrock, with a high percentage of silty material with low permeability, as exists in the Blanchard Hill area.

Glacial Stream Deposits

These deposits consist of sand and gravel laid down by the action of glacial melt water streams. These ancient water courses carried sorted till material from glaciers and glacial lakes, which were then deposited in sedimentary layers in formations such as eskers steep ridges), kames (valley-side deposits), and deltas.

In Dunstable, these formations exist in the central north-south axis of town in a broad irregular band parallel to Salmon Brook. The older and coarser deposits lie at the southern end of town, with more recent and generally finer deposition occurring in the northern sector. The older, southern deposits are also higher in elevation and show a more uneven topography than the northern formations. Kame deposits were created by the placement outwash material over or against glacial ice, which later melted and caused the collapse of the structures. They are characterized by relatively level formations with at least one side steeply sloping.

Three formations especially prominent along the course of Salmon Brook are various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collaborative

NASHUA, NEW HAMPSHIRE
NASHUA, NEW HAMPSHIRE
BURIAL GEOLOGY

It can be seen from this that geology places certain limitations on how the landscape of Dunstable should be altered. These limitations can be ignored, but only at a social and environmental cost to this and future generations of town citizens.

Soils

Soil characteristics are perhaps the most important factor in guiding sound development policy for a community. This is especially true for a town such as Dunstable, which has a small public water system and no sewage disposal system. The soils of every building lot must provide wastewater treatment, and most lots must draw their own water supply from their soils as well.

Dunstable has detailed soils mapping prepared by the U.S.D.A. Natural Resource Conservation Service in draft form, showing the town's soils at the U.S.G.S. topographic map scale. This map accompanies an Interim Soil Survey that was published for Middlesex County in July 1995. This Interim Soil Survey has no mapping that shows soil types grouped by development limitations.

For this purpose, this updated plan shows the Soils Map prepared by the Environmental Collaborative, planners of the 1976 Open Space and Recreation Master Plan. They checked the 1924 Soil Survey (the only one available in 1976) against U.S. Geologic Survey surficial geology mapping, and created the accompanying soil map as the resulting composite.

Three major categories are shown, based on common characteristics. These are (1) hardpan soils (till types), (2) wet soils and (3) highly permeable soils (outwash types). Most of eastern Dunstable has hardpan soils laced with a network of wet soils, and sizable areas of hardpan are found throughout the western half of the town. Central Dunstable is largely composed of outwash soils surrounding the wet soil arteries along Salmon Brook and its tributaries. Outwash soils are also found in western Dunstable along the Nashua River and Unkety Brook, and wherever the bed of glacial Lake Nashua lay. Wet soils extend in a network throughout Dunstable, all along the circulatory system of its water bodies and water courses.

Hardpan Soils

Hardpan soils are the group of soil associations generally consisting of glacial till deposits, with occasional rock outcropping. From available information, the associations forming this group consist of well drained and somewhat excessively drained gravelly or rocky surface soils, with a hardpan, silt or clay layer, beginning at depths ranging from near the surface to 55 feet. This hardpan, silt or clay layer is slowly permeable and retards the downward movement of water. Because of hardpan and bedrock subsurface conditions, water tables in these soils are often near the surface. In addition, the greatest percentage of slopes over 10 percent occurs within this group, compounding these soil problems.

The variation within this group is considerable — from rock outcropping to soils which are relatively free of large stones and which are still used for agriculture. An example of


SOILS
Prepared for the Dunstable Conservation Commission
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the latter is the Charlton soil association located in the relatively flat "H" shaped area at High, Thorndike, and Forest Streets.

Because of their often permeable surface layers, these till soils often easily pass percolation tests. It is only when hardpan soils become extensively developed that problems of effluent deflection to the ground surface and well contamination begins to occur. These results emphasize the fallacy of relying only on percolation tests to judge the suitability of soils for development.

The public health danger which results from development on these soils has required many communities to provide public sewage disposal facilities to these areas, resulting in ever more dense development in the remaining open land in the community. Dunstable's two acre zoning is designed to prevent this from occurring, since the lot should be large enough to relocate a leaching field. This was the rationale given by the Massachusetts Court of Appeals when it upheld two acre minimum lot zoning for the town of Sherborn.

Wet Soils

For its mapping, the Environmental Collaborative defined wet soils as "those classified as muck or peat by the 1924 survey, those areas currently shown as wetlands on U.S.G.S. and on the town's aerial photographs, and those areas which are most likely to have a water table within 3 feet of the soil surface." The 1995 Interim Soil Survey defines wet, or hydric, soils as those that are "saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part". In addition to muck, peat, and other obviously wet soils, hydric soils also include those that are poorly drained and have a frequently occurring water table at less than 1.5 feet from the surface for more than 2 weeks during the growing season. A further discussion of the attributes of wet soils may be found in the section on wetlands.

The difference in wet soils' water table between the Environmental Collaborative (3 feet) and the 1995 Interim Soil Survey (1.5 feet) would mean that less area would be shown as wet soil today. However, the Soil Map is adequate for the purpose of this plan, since it is intended as a general planning tool to indicate possible soil limitations rather than an identification of "ground truth".

In the western sector of town, wet soils are the final deposits of Glacial Lake Nashua. They represent the eutrophication or dying out of later glacial lakes and ponds remaining after the draining of the great lake. Hauk Swamp is an excellent example of this eutrophication process underway. Successive seasons of decaying organic matter built up deposits of muck and peat which vary in depth from 1 to 30 feet. Even though some soils are seasonally wet, they have been productive agricultural areas throughout Dunstable's settlement. In the easterly section, the smaller, elongated peat deposits resulted from dammed up streams.

Because of the shallow water table and poor drainage characteristics, wet soils are highly unsuitable for septic tank effluent disposal. Related types of soils are the seasonally dry soils of fine silt and sand which settled to the bottom of Glacial Lake Nashua. They are characterized by flat topography, a high water table in the lower elevations, and low permeability because of high silt content. Because soils of this type tend to have bands of sand and silt or admixtures of both, and because of the unevenness of the water table due to this and topographic characteristics, these soils vary considerably in their suitability for septic tank leading fields. A High Intensity Soil Survey would be needed to differentiate those areas which are suitable for this purpose.

Highly Permeable Soils

Highly permeable soils include the Merrimack and Hinkley soil associations. They are the gravelly and sandy soils deposited by Glacial Lake Nashua in the western sector and by glacial streams in the Salmon Brook area. They are well drained soils free of hardpan and have a relatively low water table. Because of their high permeability, they have tended to be too dry for many agricultural uses. Extensive areas of these soils are characterized by flat terraces ending in abrupt, steep hills. These are the kame formations mentioned earlier.

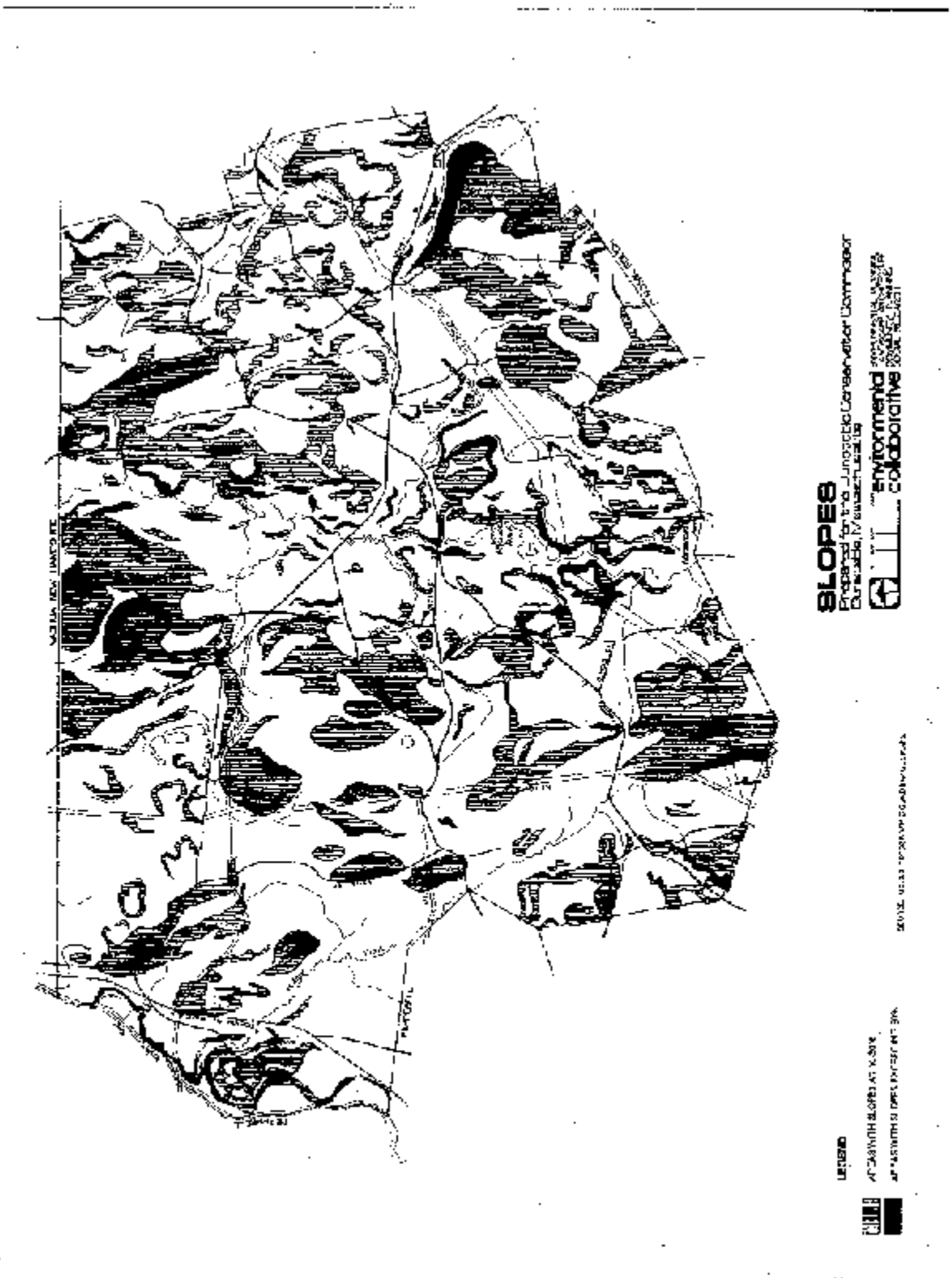
Because these soils are both highly permeable and have flat or gently rolling topography, they are the most suitable soils for residential development. They also represent the most productive ground water aquifer deposits because of their permeability, transmissibility, and location adjacent to surface water recharge areas.

Where slopes exceed 10 percent within this soil area, precautions should be taken to assure that wells do not become contaminated by the underground seepage down slope of effluent, or, on level ground, the contamination of ground water due to rapid percolation in the coarser ranges of these soils.

Soils and Resource Conservation

Soil characteristics should be one of the most important factors in governing future development in Dunstable. Whether soils attain this importance, however, depends on the degree to which the town adopts sufficient safeguards to assure that future development occurs where the land is capable of absorbing it without negative impact.

Among Dunstable's outstanding soil resources are the sizable areas of prime and significant farmland soils found throughout the town. An analysis of the 1989 Soil Survey reveals that nearly one quarter of the town may be in this category, with extensive areas of prime soils near the Nashua River and on the western border, in Dunstable's geographic center, and in the northeastern and southern parts of town. Whenever the opportunity arises to permanently protect these prime soils for agricultural use, the town and state should invest in Agricultural Preservation Restrictions (APRs) so that farmland can continue to be farmed forever. By providing the physical basis for a viable agriculture, these soil resources form the foundation of Dunstable's rural character.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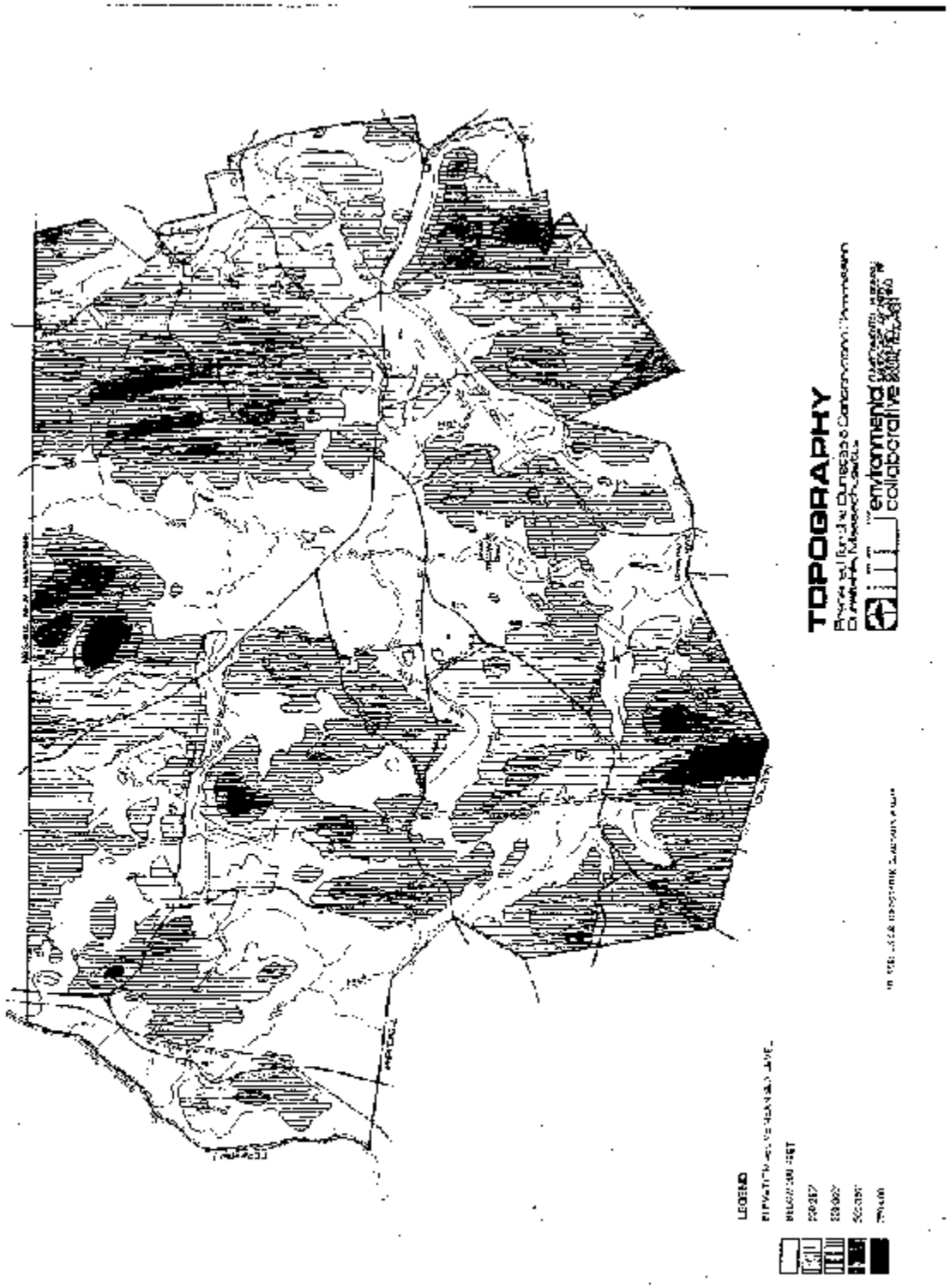
TOPOGRAPHY
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Topography and Slopes

An analysis of topography can yield important information useful in resource conservation. It tells where flooding is likely to occur, where slopes may be too steep for development, the visual impact of development, and through land forms, determines to a great extent the functional characteristics of soils.

Topographic Characteristics

Topography in Dunstable varies from approximately 150 feet above mean sea level in the extreme southeast corner of town to 390 feet atop Forest Hill nearby. As shown on the accompanying topographic map, the western and central parts of town are characterized by generally flat topography, with drumlins providing isolated relief in elevation. The eastern sector of town is more varied in topography due to the extensive bedrock and glacial till conditions here. Topography less than 200 feet in town is generally flat, and contains most of the town's wetlands and water courses. This area was formed either by lake bottom deposits of Glacial Lake Nashua or through deposition of glacial streams. Most of the area, if not actually wet part of the year, has a high water table.

However, topography adjacent to Salmon Brook ranges from 154 to 200 feet. This area is more varied in land form type, and, except on the valley floor wetlands, is less likely to have a high water table, due to its geologic history. The eskers and kame terraces here provide a variety in elevation and are composed of very porous gravel deposits, unlike the siltier, organic deposits in the lake bottom and wetland areas.

Topography from 200 to 250 feet is more pronounced in steepness, except on the flat kame deposits adjacent to Massapoag Pond and Black Brook. Those areas above 250 feet are more pronounced in steepness, except in sectors at the base of Kendall Hill and Forest Hill. The area is composed of bedrock and till deposits, although in some level areas, the till has been sufficiently free of boulders to allow tilled fields. Some wetlands here are perched as high as 280 feet, as at the base of Forest Hill.

Slope Characteristics

As is evident from the map showing slopes in Dunstable, a considerable portion of the town has topography with slopes of 10 percent or more. The map shows two ranges of slope steepness: 10-30 percent and over 30 percent.

Slopes greater than 10 percent present problems for development because of the potential difficulties in siting septic tank filter fields. The U.S. Soil Conservation Service advises that on slopes greater than 10 percent, trench-filter fields become difficult to lay out and construct and that seepage beds become impractical. In addition, effluent from the septic system seeps to the soil surface downhill from the system due to the short distance from the trenches to the downhill side. This condition is even more likely to occur when there is bedrock or a layer of hardpan near the soil surface, which would tend to deflect the effluent laterally to the surface. This combination of slopes, poor soils, and bedrock exists in upland till areas such as Blanchard Hill.

Slopes with gradients greater than 30 percent present not only obvious problems for septic system disposal, but are generally difficult and expensive to build on. The cutting and filling necessary to site roads and dwellings requires disfiguring the landscape to a greater extent than would be required in more level areas. Since bedrock is often exposed or near the surface on these slopes, the cost to the town or developer of trenching utilities here can often be prohibitive.

In addition to classifying slopes by degree of steepness, they can also be divided by soil composition. Most slopes shown on the map are composed of glacial till overlying bedrock. The elongated, swirling slopes shown along Salmon Brook and the Nashua River, however, are different in composition. They are the slopes of eskers, kame terraces, and stream terraces and are composed of sedimentary sand and gravel deposits. Because of this, these slopes are far more vulnerable to disruption than the more consolidated slopes of glacial till. These deposits may also present a severe septic effluent deflection problem when they overlay bedrock or slowly permeable till material. Because of their vulnerability and strategic location adjacent to the town's main streams, they deserve high priority for protection.

Topography and Resource Conservation

Topography is critical in resource conservation planning because of its influence on the flow of water in the landscape. This is true not only of surface water but ground water as well. In the upland hilly areas of Dunstable, both steep slopes and impermeable soils cause quick runoff downstream. Because development will bring with it more hard surfaces and increased rates of runoff, future development controls in these areas should stress techniques of holding back peak storm water runoff through retention basins or other methods. Those wetlands which are "perched" within these upland areas should be protected to assist in decreasing the velocity of peak runoff through localized flooding of these areas.

In the flat low-lying areas of town, particularly those areas adjoining Salmon Brook and Unkety Brook, water has opposite characteristics. Here water is more slow moving and tends to spread out over the landscape during peak flows. This is the path of least resistance for the water because of low embankments and flat topography in this area. This flooding action is nature's safety valve, allowing excess water to be absorbed by the landscape and thus decreasing damage-causing high velocities during peak flows.

In this landscape, sound development controls dictate allowing this safety valve to remain, and therefore preventing encroachment on it. Here, the controls should allow space in the landscape for flood waters to harmlessly expand across the land, whereas in the upland areas the objective is to hold back any additional runoff caused by development through methods which in a sense induce localized flooding.

Landscape Character

Dunstable's winding roads traverse a traditional New England landscape, with its tapestry of stone-walled fields, forested rolling hills, rushing brooks and placid millponds, and those handsome emblems of long-standing human use of the landscape — old barns and classic farmhouses framed by venerable shade trees. All these elements form Dunstable's rural character, prized by those who live here.

The visual character of Dunstable is one of its most priceless assets. The pattern of forests and farm fields, of hills and lowland, gives it variety and beauty. Mostly by luck, the town has escaped major suburbanization so far. Its older buildings remain as major man-made focal points in the landscape. Because of this rural character, new residents are attracted to the town. Paradoxically, the additional families moving into the town may be instrumental in destroying the character they came to enjoy, if development is not carefully designed. Yet new families can also be instrumental in protecting the town's character by getting involved in open space conservation.

In general, the recommendations in this report will assist in preserving much of this character by protecting specific areas or by controlling the development patterns on certain lands.

Character Elements: Openness and Enclosure

The major scenic character elements are those which give a feeling of openness (fields, marsh, surface water bodies), and those which are areas of enclosure, e.g., woodland, stone walls, hills, meandering roads. Each has its own qualities which call for different approaches in preserving its visual characteristics. In addition to these are those built up areas of town which either have or lack distinguishing character.

The open areas of town are most visually fragile because any development which occurs is clearly visible. This is important because those soils which are now tilled for farming are often those which are most suitable for septic tank effluent disposal, and therefore most lend themselves to residual development. The often precarious economic condition of farming can result in the selling of fields for development.

Open marsh can be effectively protected, but its contiguous upland does not have similar protection under the Wetlands Protection Act. Areas adjoining marshes should be conserved because they form an integrated unit with the marsh, protecting its water quality, wildlife habitat, and its scenic character.

For the same reasons, shoreline protection should be applied to open surface water bodies. The health of many water bodies depends on their having a naturally vegetated shoreline buffer. The pressure to develop pond shorelines is intense, since they are considered prime lots. This is true even when the pond is too small to have much recreational value, as at Sweet's Pond.

Areas of enclosure are primarily woodland which abuts roads, along with stone walls, hills and meandering roadways which reinforce this sense of enclosure. The threat to the

visual quality of these areas is that roadside strip residential development will remove a substantial amount of woodland and stone walls which abut the town's existing roadways. The result will be the monotonous repetition of suburbanization which individually the new home owners came to escape but to which they will contribute. Since development on existing roads is not subject to subdivision regulation, other means of preserving the visual integrity of existing roads need to be found.

Dunstable's many hilltops — Blanchard, Drake, Forest, Horse, Nuttings, Spectacle — are a cherished framework for its rural landscape. Time and again, in community meetings for the 2020 Vision for the Nashua River Watershed and for this Open Space and Recreation Plan, these hills have been named as important resources to protect. Dunstable's hills are recognized as key elements of the landscape. Views of these hills are as important as views from the hilltops. Because of their visibility, development of these hilltops has the potential to be very detrimental to the integrity of the rural landscape. They are vulnerable to development, because most are not so steep as to preclude accessibility. To date, the following hilltops are protected in whole or in part: Blanchard, Spectacle and Horse Hill.

Goals for Preserving Scenic Areas

The various types of scenic areas in Dunstable require differing approaches to assure that they receive adequate protection with the resources that the town has available. Following are the more critical areas which deserve protection controls.

1. Protection of hilltops as natural areas free from development. Hilltops can be named in Dunstable's cluster ordinance as resources that the town would like to have set aside as open space in cluster developments. Dunstable could also establish a Steep Slope Conservation Zoning District, defining areas where there is a prevalence of slopes greater than 15%, for instance, and requiring that development of land in this district be by special permit only. This would not prevent development of these areas, but could give some control over environmental impacts. The only certain way to protect the town's hilltop views is through conservation acquisition.

2. Protection of scenic roads through preservation of shade trees and stone walls. To adequately protect the visual integrity along these roads, it would be ideal if there were a Greenway at least l00 feet wide on each side, except for access to the lot or subdivision. Scenic easements offer a method to accomplish this. In addition to their scenic value, these easements could contain bicycle paths and bridle trails, as well as be used by pedestrians. They can thus serve a safety and recreational use as well as scenic. Since they will have an extensive ecotonal edge, they could also be valuable wildlife habitats.

The state law governing protection of scenic roads (Ch. 40, Sec. 15c) provides only for town board review of any alterations within the road right-of-way and immediately contiguous areas. The law excepts state highways from these controls.

3. Preservation of open fields. Fields can be vulnerable to be developed as home sites because tilled fields are generally on permeable soils. Conservation acquisition of fields up for sale may be very expensive. The most reasonable approach to their protection would be to encourage continuing agricultural use.

One way to keep land in agricultural use is through Agricultural Preservation Restrictions (APRs). With APRs, the Massachusetts Department of Food and Agriculture purchases the development rights from farm families so that they can realize the development value of their land while the land remains as farmland forever. In this way, new generations of farmers can afford to buy the land and continue to farm it, because it no longer has development value. There are many demands for APR funding state-wide; local contribution towards APRs in the town may leverage state funds.

At present, most of Dunstable's land in agricultural use is classified under Chapter 61A, an excellent measure that reduces the assessment on farmland, recognizing that this land use demands far less tax investment for services than does residentially developed land.

Because there are so many Chapter 61A lands, it would be wise to plan for future acquisition of land or APRs on some of these properties before they may come on the market. The law gives municipalities a 120-day option to purchase Chapter 61A lands that are for sale. The first steps would be to establish a fund dedicated to this purpose, and to set criteria for the types of lands that would be priorities for acquisition.

Some possible acquisition criteria should be: prime farm soils; an evaluation of the property as a key element in the town's rural character, either through its size, its visibility from town roads, its pattern of land use; the property contains other resources noted as important to protect in this plan, such as aquifers, water bodies, floodplains, rare species habitats, hilltops.

If farm properties are purchased by the Town, there could be a lease-back arrangement with the present or new owner to provide sufficient income to retire the bond issue floated for land purchase. The town could also lease rights for recreational uses which would preserve open fields, for example, a riding stable and its contiguous pastures.

4. Protection of shrub marsh and pond shorelines from development. This can be done through zoning for setbacks or through acquisition of easements or fee simple title of the wetland and adjoining upland. Towns have authority to establish their own river, pond, and stream protection bylaws, which can protect shoreline buffers more thoroughly than is possible under the Wetlands Protection Act.

5. Preservation of scenic quality in new residential developments. This can be accomplished through subdivision control, the cluster development and zoning provisions. The formation of a design review board could raise the general quality of subdivision site design. Issues to be addressed in these regulations include the preservation of some of the site as public land, limitations on development where

visibility is high, e.g. on hillsides, woodland to be cleared or preserved, building setbacks. The cluster development ordinance can be designed to allow flexibility in site planning to protect scenic resources.

6. Protection of historic sites. Parts of Dunstable, the town center in particular, are well worth protecting through the formation of a historic district. This would prevent new incompatible uses or incompatible alterations of existing structures.

7. Access to scenic areas. Many areas of Dunstable with scenic value presently have little public access. This is true of places such as the Nashua River corridor. Public access to these lands would add to the appreciation of Dunstable's scenic values.

8. Preservation of forest lands. Obtain Forest Legacy designation. The Forest Legacy Program protects important forests from conversion to nonforest uses. These forests provide essential wildlife habitat, protect water quality, offer outstanding recreation opportunities, afford outstanding scenic views, are home to historic sites, and/or provide the opportunity to continue traditional forest uses. A Federal-State partnership allows landowners to keep their land private while ensuring it remains forest forever through the use of conservation easements.

Water Resources

Surface Water

Water resources in Dunstable consist of the various forms of surface and subsurface water: ponds, rivers, brooks, wetlands, and aquifers and other groundwater sources. All of the water which falls on Dunstable eventually drains into the Merrimack River, approximately one and a quarter miles east of the town's easterly border. The town's drainage pattern can be subdivided into three smaller watershed areas. These drainage areas have distinctive land form characteristics and stream types: (1) the Nashua River watershed, (2) the Salmon Brook watershed and (3) the Eastern Upland watershed.

Nashua River Watershed

The Nashua River watershed covers an area in Massachusetts and New Hampshire of 538 square miles in 31 communities. Dunstable's percent of this watershed is quite small. Unkety Brook is Dunstable's main tributary to the Nashua River. The watershed of Unkety Brook draining into the Nashua River from Groton and Dunstable is approximately 2,000 acres. That part of the Nashua River watershed which lies within the western part of Dunstable has generally flat topography, relieved by several drumlins scattered throughout the area.

During the glacial era, Glacial Lake Nashua covered this area, except for the exposed drumlins. The greater part of the watershed consists of lake bottom deposits of sandy gravel and wetlands. Water runoff characteristics are therefore moderated by the

absorption of excess runoff by these wetlands and porous soils. During peak runoff periods, as in early spring and flash storms in summer, the soil characteristics of this watershed are capable of absorbing this excess as groundwater and discharging it back into streams at a moderate rate.

Most of the watershed is in mixed hardwood/softwood forest, with scattered agricultural use. Residential development is concentrated in the Groton Street area, in the southwestern part of town, along Pleasant Street, and Hall Street.

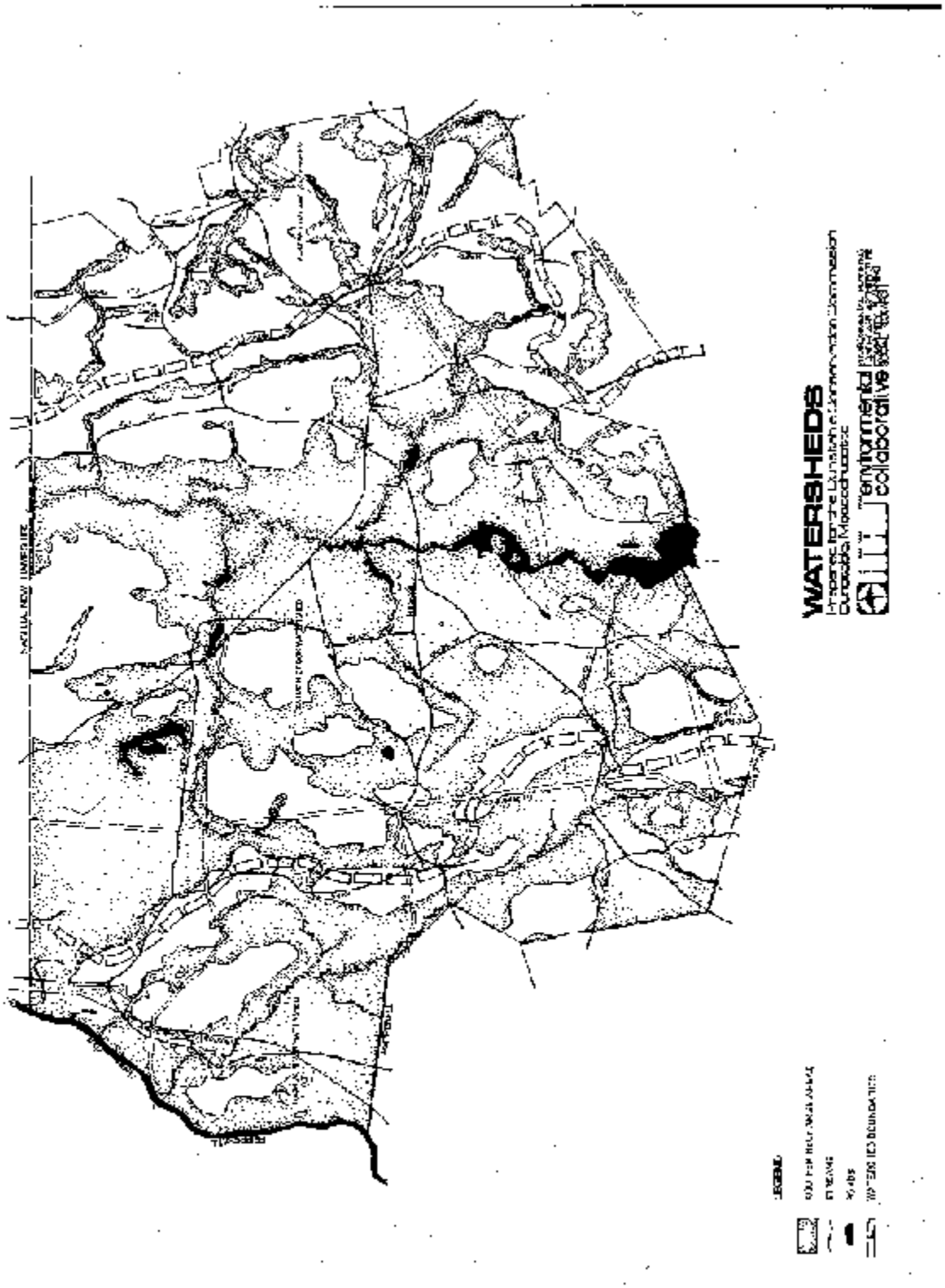
The Nashua River is a meandering stream of relatively low velocity, which some geologists attribute to its northward "uphill" movement against the general direction of the region's topography. The Nashua River is almost "invisible" within Dunstable, since no roads in town cross it or even closely approach it. Because it has cut steep embankments into the alluvium and glacial stream terrace deposits, the river tends to be hidden from view. These embankments consist of steep escarpments approximately 15 feet high—but often reaching 30 feet—which extend immediately into the river. These flat delta deposits consist of sand and sandy gravel, and are quite vulnerable to erosion by river flooding.

No longer does the river suffer from large scale discharges of untreated domestic sewage and industrial waste. The "murky brownish-green color and noxious odor" noted in Dunstable's 1976 Open Space Plan are now gone. The Nashua River generally meets the standards for its Class B water quality classification along this stretch, thanks to the 11 new, enlarged, and improved wastewater treatment plants that have been constructed upstream over the past two decades. However, the Nashua River continues to be vulnerable to pollution caused by malfunctions at the wastewater treatment plants, and by non-point sources of pollution. Surface runoff from streets is one of these non-point sources of pollution, contributing substantial sediments as well. Concentrations of development based on septic systems can also cause pollutants to leach into tributaries. These negative effects could be lessened, however, through proper development controls.

The free-flowing stretch of the Nashua River that passes by Dunstable is attractive for canoeing, with a launch in Pepperell upstream and take-out in Hollis, NH, downstream. An access to the Nashua River in Dunstable has recently been acquired by the Mass. Division of Fisheries and Wildlife. So far this is the only piece of public land on Dunstable's stretch of the Nashua River. Ongoing efforts to conserve land here should continue. Access to the Nashua River has been indicated as a community need.

Unkety Brook meanders slowly through its course in Dunstable, has a low embankment, and is bordered by wetlands for most of its length. Its tributary streams are relatively short and drain adjoining wetlands. Because of the existence of wetlands and permeable soils here, the brook has a generally steady seasonal flow.

Fishing and nature study are the main forms of recreation in Unkety Brook. There is access to Unkety Brook at Pleasant Street at the town's Gardner Conservation Area, and


WATERSHEDS
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at Groton Street at the Dunstable Rural Land Trust's Unketynasset Brook Meadow. A Greenway is growing along Unkety Brook, thanks to the Dunstable Rural Land Trust, which holds 47 acres of brook side land, and to the Conservation Commission, which holds 156 acres on the brook.

Protection of the Nashua River watershed within Dunstable should concentrate on

(1) protection of the river embankment and adjoining flood prone areas,

(2) preservation and protection of those watershed characteristics which reduce flooding, especially of wetlands adjoining Unkety Brook and its tributaries,

(3) adoption of development controls which will modify peak runoff and lessen the danger of pollution.

The Nashua River Watershed Association's long range plan, the 1995 to 2020 Vision for the Nashua River Watershed, analyzes the watershed's resources and makes recommendations for protecting the water quality and open spaces of the watershed while using its land carefully. Many of these recommendations have been adopted in this report, and made more specific in their application to conditions existing in Dunstable.

Salmon Brook Watershed

Salmon Brook meanders through the center of town from Massapoag Pond in the south to the New Hampshire border in Nashua. Its watershed covers the greater part of town, including that part of town which has been most developed. Salmon Brook is a slowly running stream, with a considerable volume even in dry periods. Its main tributaries in Dunstable are Joint Grass Brook, Hauk Brook and Black Brook. These streams originate in the upper till and wetland areas of the watershed, and generally have a greater velocity and more seasonal flow.

The soils within the watershed consist of bedrock and till in the drumlins in the west and upland areas in the east, and glacial stream outwash soils in the low-lying areas. These soils were formed by receding glaciers, south to north. During this time Salmon Brook was probably a south-running brook, but changed direction as a lower outlet was opened up further north, into the Merrimack River.

Because these glacial outwash deposits are highly permeable, much of the watershed is an aquifer recharge area, that is, an area which collects surface water and filters it into the soil as ground water. These same areas, of course, tend to be highly productive of ground water for domestic and municipal wells. During seasons of excess rainfall, water is absorbed from the Brook and its tributaries, and then released at a moderate rate when peak runoff conditions have subsided. Because of the permeable soils adjacent to this water course and Massapoag Pond, it is highly vulnerable to being polluted by residential development along the pond shoreline. This is particularly true of the Tyngsborough part of the shore.

The few standing bodies of water which exist in Dunstable are located within the Salmon Brook watershed. The only major water body in town is Massapoag Pond, which extends into Tyngsborough and Groton. Its embankment is characterized by steep, high slopes of kame terrace deposits and eskers. Lower Massapoag Pond is smaller and more elongated in character, with a shoreline of primarily shrub marsh wetland. Smaller ponds along the three main tributaries were formed by damming during the last two centuries for various economic purposes. A new pond in the northwest corner of the watershed was formed by gravel operations, and left as part of town-imposed land reclamation when operations ended.

The main water-based recreational activity in this watershed is swimming and boating in Massapoag. The Lowell YMCA has a summer camp on the western shore of Massapoag Pond in Dunstable. Homes occupy much of the remaining shore, but some shoreline is undeveloped. There is no formal public access to the pond in Dunstable. Salmon Brook is used for fishing and canoeing. There is access to the Brook at Pleasant Street at Spaulding-Proctor Reservation and at Main Street at Sargent Conservation Area, with a take-out at the Arched Bridge Conservation Area on High Street. The Spaulding-Proctor Reservation, town-owned conservation land, borders all of the westerly shore of Lower Massapoag Pond and provides access to this pond and the brook. Salmon Brook, with its unspoiled environment of marsh and woodland and its meandering nature, is an excellent stream for canoeing.

Formulation of a protection strategy for this watershed should consider that this area will probably absorb the major development which is likely to occur in the town in the future. With this in mind, resource conservation strategy should emphasize:

(1) preservation of those landscape elements which will tend to modify flooding and polluting of the watershed's streams,

(2) development controls and acquisitions which will preserve the visual integrity along the watershed's streams and ponds,

(3) protection of ground water aquifers and critical recharge areas, and

(4) provision of adequate public access to all of the water resources existing within the watershed.

Through its acquisition program, the Conservation Commission has strongly emphasized protection of this valuable watershed resource. A Greenway along Salmon Brook is growing. More than 87 acres have been added since the 1976 Plan was completed, with the Kennedy, Arched Bridge, and Goldthwaite Conservation Areas, the Livrakis Conservation Easement, and the New Town Wellfield.

Eastern Upland Watershed

The upland till area of Dunstable is drained by three intermittent streams which flow

into Locust and Flint Ponds in Tyngsborough. Because soils in this watershed are generally slowly permeable, wetlands small in area, and slopes generally steep, water runoff characteristics are relatively fast. As the area develops, the impacts will be quicker in coming than for the other watersheds. Because of this, and because soils in this area tend to be hardpan types with limitations for septic systems —complicated by slopes—protection strategies should emphasize:

(1) development controls which limit construction to hazard-free areas,

(2) controls which regulate peak discharge of storm water, and

(3) preservation of wetlands as natural storage basins and pollutant modifiers.

Flood Hazard Areas

The Flood Prone Areas map shows extensive floodplains along Dunstable's three major streams: the Nashua River, Unkety Brook, and Salmon Brook.

Nashua River

During extreme floods, the river overflows high embankments and inundates the flat delta areas. However, each spring the river floods to a lesser extent, steadily undercutting the embankment when it does. The substantial tree growth along the river embankment has prevented this erosion from being too extensive, but flood waters still undercut the vegetation at the roots. Fallen trees in the river testify to the steady erosion which occurs during spring flooding periods.

The principal cause of flooding along the Nashua, and in New England generally is runoff from melting snow in late winter and early spring. This melting is greatest during heavy spring rains, when the ground is still frozen and cannot absorb the excess runoff. The worst such storm was recorded in 1936, but flooding occurs yearly with varying severity. Hurricanes are also a source of flooding conditions, especially when accompanied by wet autumns, when the soil is already saturated. Severe storms of this nature occurred in 1938, 1954, and 1958.

There are two non-seasonal factors which contribute to flooding in the Nashua watershed: soil conditions existing in the drainage basin area and the extent of development. Because extensive areas west of Dunstable consist of glacial till and bedrock deposits, runoff from tributary streams into the Nashua River is faster than if the watershed consisted more of wetlands and porous soils. In essence, this means that because of its unique geologic characteristics, the Nashua River is probably more prone to flooding than streams with more favorable soil characteristics.

Perhaps the greatest single factor governing the future extent of flooding on the Nashua is the development which will occur in the watershed. As development increases, the natural cover which now modifies water runoff—soils, vegetation, wetlands—will be destroyed and replaced with paving or buildings. Because runoff from these surfaces is much quicker than from natural surfaces, increased development without runoff

FLOOD PRONE AREAS
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controls will be accompanied by more frequent and severe flooding.

Unkety Brook

When Unkety Brook floods west of the Nashua Valley Railroad Trail, this is usually due to backing up from the Nashua River flooding rather than the brook. The brook itself has an extensive floodplain along the broad wet meadows that border it.

Salmon Brook

Salmon Brook floods its adjoining marshes during periods of serious spring flooding. These marshes provide a natural storage basin for excess water during these periods, without damaging natural formations or man-made structures. As development occurs in Groton, Tyngsborough and Dunstable, however, the probability of damaging floods will increase. The extent of flood damage will depend on wetlands preservation and development controls regulating storm water runoff. Wetlands now serve as natural retention basins; their reduction means a corresponding reduction in the capacity of the land to resist flooding. Development controls can prevent construction in flood-prone areas, and can assure that new subdivisions provide a means to restrict peak storm runoff.

Wetlands

Wetlands in Dunstable

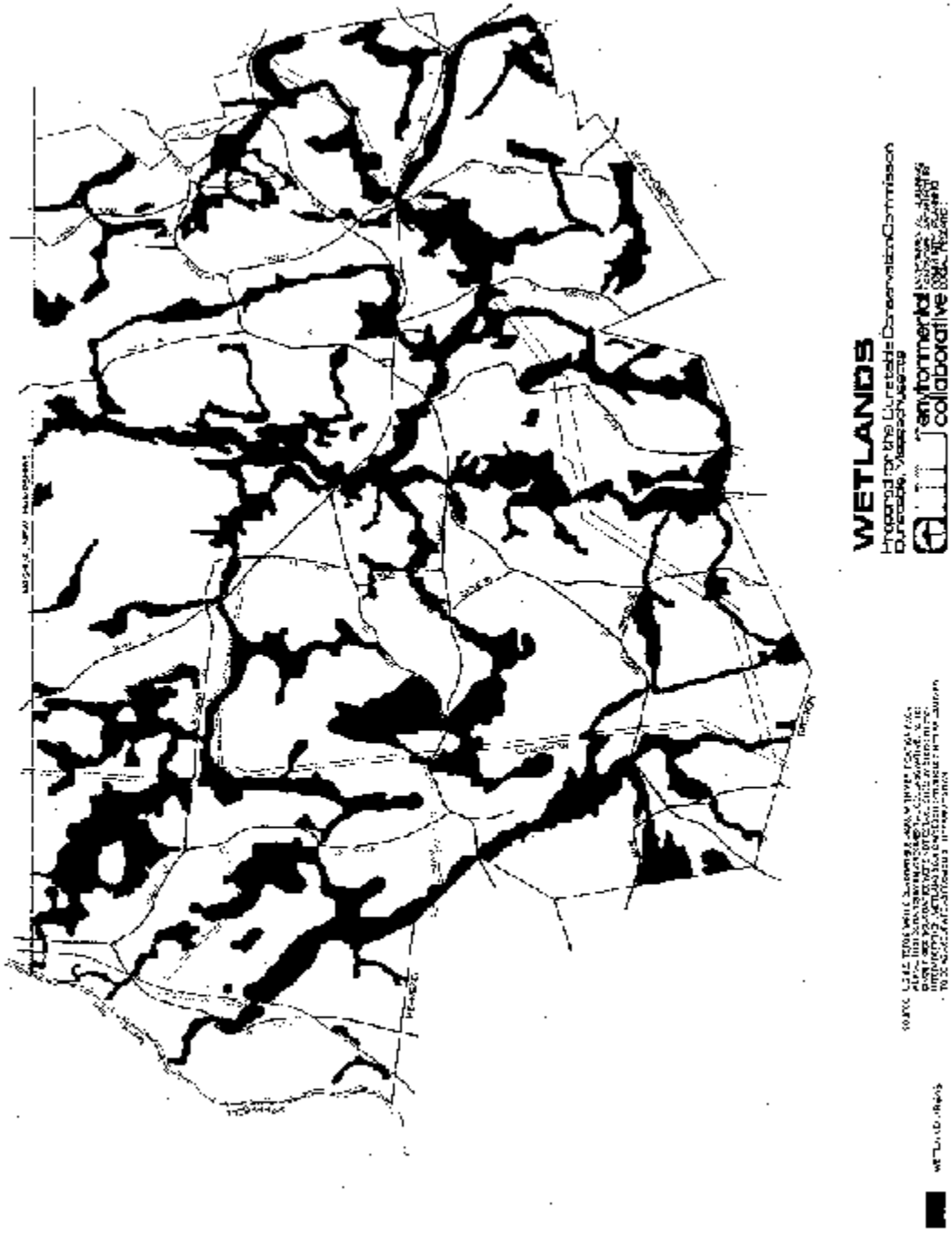
In Dunstable, wetlands perform several functional and aesthetic duties, depending on the characteristics of the watershed. In the Nashua River watershed they "hold back" flood waters along Unkety Brook from reaching the main stream. For the Salmon Brook watershed, wetland marshes along the stream act as areas to accept flood waters when they come and serve to reduce the velocity and severity of flooding. They also assist in recharging ground water. The wetlands along the brook form a unified visual and aesthetic unit with the main stream. Unlike the wetlands in the other two watersheds, the Eastern Till watershed has smaller wetlands which are perched on elevated "plateaus" of rocky till, where streams connect wetlands rather than meander through them. Wetlands here can be seen as a series of sponges, which retain some of the fast-running water of the brooks that connect them, and then slowly release it.

Functions of Wetlands

Since this report recommends various wetlands protection strategies, it is advisable to review why wetlands deserve to be protected. Wetlands have several functional and aesthetic purposes which warrant giving a high priority to their preservation.

1. Wetlands serve as natural drainage ways

All water which falls on the landscape either is absorbed into the ground, evaporates, or proceeds on the surface to some low point. In Dunstable these low points are the brooks


WETLANDS
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and wetlands which collect surface water from higher ground and transport it to either the Nashua or Merrimack Rivers. Wetlands and brooks thus perform an engineering function in serving as the town's stormwater drainage system.

In this capacity they (1) collect excess surface water, (2) serve as holding basins under flood conditions, and (3) carry away excess ground water. In this respect they perform these functions better than a manmade stormwater drainage system, since man-made systems seldom perform all three functions as well in terms of cost-effectiveness and low maintenance.

It is often impossible to determine the value to a community of natural resource preservation. If wetlands are destroyed, however, an alternative storm water drainage system must be constructed to replace this function of wetlands. How much would this "replacement cost" be?

The 1976 Plan estimated that if all wetlands and brooks in Dunstable were filled (as has been done in many communities) and replaced with an average of 48 inch reinforced concrete pipe where major collectors were needed, 248,600 lineal feet or approximately 47 miles of pipe would be needed for the main trunk line alone. Including maintenance manholes, the cost for this system was estimated at $13,175,800 in 1976. According to 1998 data, 20 years of inflation increased costs by 283%, such a piping system would cost $37,292,097 — a very steep price for a small town. This costly system would only be a partial replacement for the natural wetland drainage, because without their associated wetlands to absorb the flow, brooks such as Salmon and Unkety could never by handled by 48 inch pipes at flood stage.

These replacement costs do not include the purchase of easements, maintenance of the drainage pipe and manholes, flood damage, or other costs involved with maintaining such a system. Most important, it does not take into account the loss to the community of other functional and aesthetic values of wetlands which are more difficult to quantify.

2. Wetlands help minimize flood damage

Wetlands do this in two ways: (1) they absorb and hold water during periods of peak runoff, and (2) they serve as safe flood plains for those areas that do flood. Wetlands thus serve a crucial role in watershed management, for they are perhaps the most important natural resource within watersheds in reducing the frequency and effects of flooding.

The water-holding capacity of wetlands is considerable. One acre of wetland will hold 300,000 gallons of water in a one foot rise. In acting as enormous sponges, they also slow down the velocity of flood water and the resulting damage, as the erosive capacity of water increases as the fifth of its velocity.

As development increases within a watershed, the value and importance of wetlands

increases. This is because development brings with it higher rates of peak storm water runoff from paved surfaces, which increase flooding severity. Those development patterns that fill wetlands are doubly hazardous, for they not only increase the volume of peak runoff, but at the same time destroy nature's means of coping with it.

3. Wetlands are ground water recharge areas

In this role wetlands filter surface water into aquifer areas, providing a stable ground water table for town and domestic wells. During periods of excess groundwater and high water table, wetlands absorb and discharge water downstream.

Where wetlands overlay alluvial deposits, as in the Salmon Brook and Nashua River watersheds, their role in recharging the ground water table is especially critical. As the U.S. Geologic Survey has shown on the Ipswich River Basin, wetlands tend to stabilize the groundwater table by removing water during excess periods and recharging ground water at other times.

4. Wetlands serve as siltation settlement basins

As soil and nutrients are washed from upland areas downstream, they are trapped in wetland areas and absorbed by them. In this way these organic materials are prevented from being washed into streams and ponds, which contribute to growth of algae and lake-bottom weeds and hasten the death of these water bodies through eutrophication. Wetlands in this role act as a filtering bed for those organic sediments and nutrients which would be harmful to other water resources. In wetlands however, they serve to build alluvial soil deposits on which wetland vegetation thrive. In areas which are extensively developed wetlands also trap sediments from roads and other paved surfaces and prevent these sediments from clogging natural or manmade drainage ways.

5. Wetlands purify the air and water of pollutants

One of the outstanding virtues of wetlands is their ability to cleanse the air and water of pollutants. As the concern over pollution increases, so does the realization that pollution abatement cannot be solely a technological solution but must rely to a great extent on processes of cleansing which occur naturally in the environment. Wetland ecosystems are one of the most important of these natural "self-cleansing" environments.

For example, studies have shown that in the Tinicum Marshes adjoining Philadelphia, 512 acres of brackish and fresh-water marsh at the confluence of the Delaware and Schuylkill Rivers, sewage effluent from nearby sewage treatment facilities is substantially modified by the cleansing action of these marshes. The study indicated that within three to five hours after the effluent water had moved across the marsh, there was a 57% reduction in biological oxygen demand (BOD), 63% reduction in nitrates, and 57% reduction in phosphates. This meant a reduction of 7.7 tons of BOD, 4.3 tons of ammonia nitrogen, 138 lbs. of nitrate, and 4.9 tons of phosphate.

Modern technology has drastically altered the natural nitrogen cycle. It is estimated that the natural turnover of nitrogen compounds in the United States is about seven to eight million tons. Our agricultural fertilizers add another seven million tons to the nitrogen cycle, building up in the groundwater in areas of intensive agriculture to the detriment of health. Another two to three million tons of nitrogenous compounds is produced as by-products from power plants and automobiles, which emit these compounds into the air where they become components of acid rain. This more that doubling of the nitrogen input into the biosphere has caused serious environmental problems in areas throughout the country.

Wetlands include vast numbers of denitrifying bacteria that take these excess nitrogen oxides and convert them into the atmospheric nitrogen of which most of the atmosphere is composed. Through the process of photosynthesis, plants produce an excess of oxygen than what they require for respiration. This excess oxygen is therefore added to the atmosphere. In wetlands mud the reduction of nitrogen and sulfur compounds containing oxygen also involves the production of oxygen. Not only do plants produce oxygen but lowly mud does also!

6. Wetlands are important wildlife habitats

As is demonstrated in the chapter on wildlife, wetlands are perhaps the most important natural resource supporting wildlife diversity. Wildlife need food, water and cover for a successful habitat, and wetlands provide all three in abundance. Because there exists a great variety of wetlands, this diversity also contributes to the variety of wildlife which can be supported.

7. Wetlands serve as a natural open space network, providing visual diversity and character to the town's landscape. Because wetlands and streams are generally linked together as a drainage network, they can also be integrated with public open spaces to serve as a natural resource/open space network for the benefit of future generations.

Open marshes are a strong element of visual diversity, appearing as placid horizontal landscapes framed by dark wooded hills on either side. Between these two landforms there is contrast in line, color, texture, and form. Wetlands here call forth an appreciation of the woodland as well, for visual enjoyment of the marsh also requires preservation of its adjoining environment.

Groundwater Resources and Aquifer Recharge Areas

An effective resource conservation and open space policy in Dunstable should emphasize protecting those areas in town which have the most important natural resource values and which are most vulnerable to destruction through development. One of these resources which has special regional as well as local significance is groundwater aquifer areas. Because Dunstable has such excellent potential high-yielding aquifer resources, with many surface recharging streams, protection of these areas should be an important element in developing acquisition priorities. Although

most of the town relies on on-site wells, the potential regional significance of these aquifers should enhance the probability of obtaining state and federal open space funding for their protection.

Characteristics of High-Yielding Aquifers

All soils contain water: some water exists in suspension between soil particles and some exists as saturated groundwater. Fractures in bedrock are also productive of groundwater. The most productive soils for groundwater aquifers are the highly permeable outwash glacial stream deposits of sand and gravel. This is because in the process of deposition, fine particles of silt and clay were washed downstream, leaving the larger particles and thus larger interstices between particles through which water can travel.

Aquifers with high-yielding water capacities have the following characteristics:

1. A water table within 10 feet of the soil surface, and not in excess of 30 feet, because of the loss of pumping head below that depth.

2. Permeable, saturated material, preferably at least 30 feet thick.

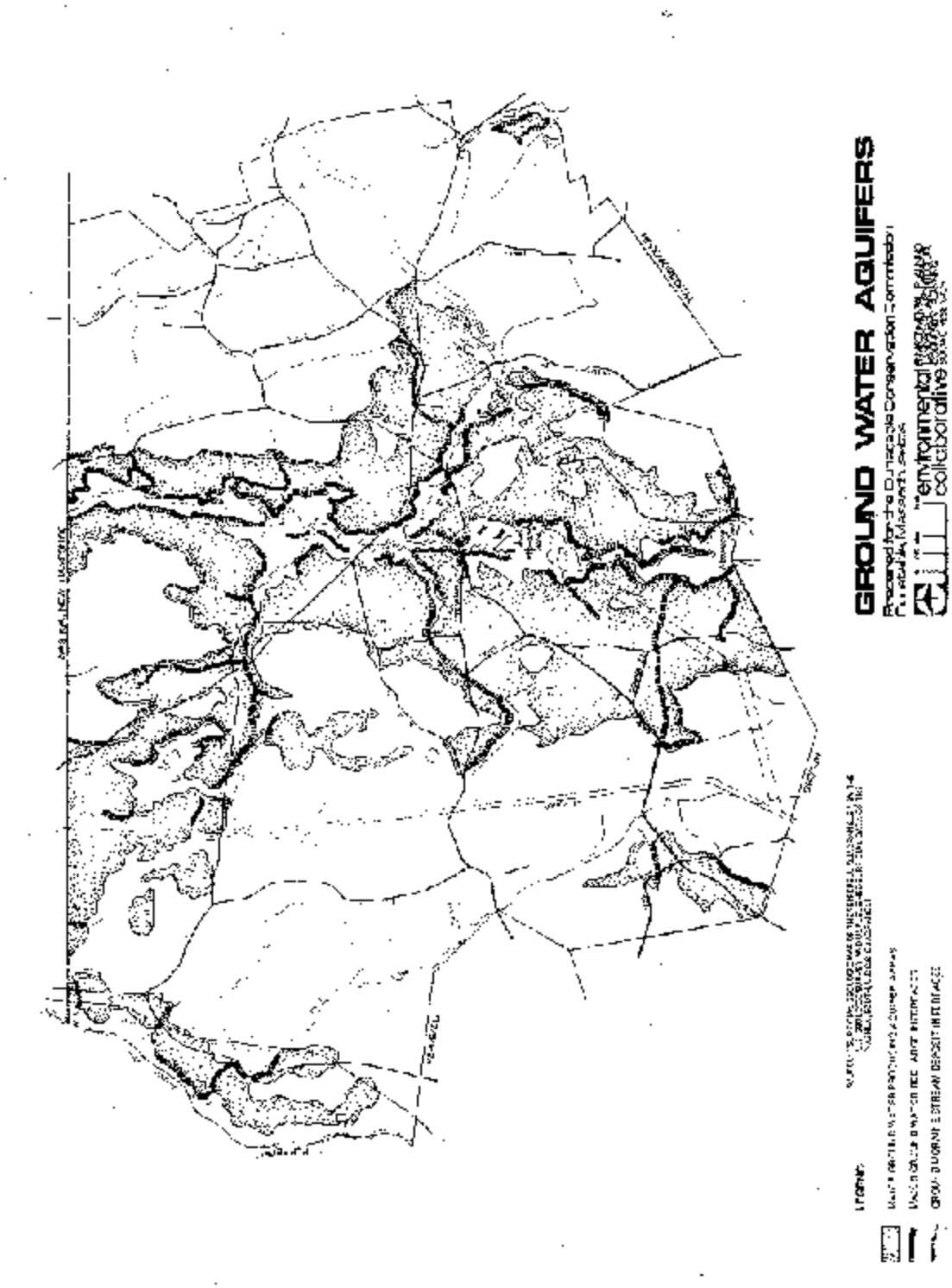
3. High transmissibility (lateral flow) of water through the soil material.

4. A dependable source of surface recharge of ground water.

Eastern Massachusetts contains extensive outwash areas, but only a small percent of these have all of the above characteristics. Since these areas also are most vulnerable to development due to their permeability for septic tank leaching fields, they are becoming urbanized faster than other soil types. Contamination of municipal wells from road salt in more heavily built-up areas is further reducing the available aquifer resources. Therefore, any sizable groundwater aquifers remaining, as in Dunstable, should receive high priority for protection.

Ground Water Resources in Dunstable

Salmon Brook Aquifer: The most extensive groundwater areas existing in town are the glacial stream deposits along the Salmon Brook watershed. These kame and esker formations border both sides of the Massapoag Ponds and the brook and its marshes. At Joint Grass Brook these deposits branch out, with an extension northwesterly following the path of another glacial stream. This traverses the former gravel site off Fletcher Street, now the Dunstable Rural Land Trust's Tully Wildlife Refuge. Not only are these deposits extensive; but they are recharged by several major streams, the most important being Salmon Brook and the Massapoag Ponds. The other, smaller brooks are as important because they flow over these deposits and in so doing constantly recharge the ground water table. The Salmon Brook aquifer is the source of Dunstable's present small public water supply.


GROUND WATER AQUIFERS

The deposits bordering the Nashua River are probably less productive because of the silty alluvium bordering the river which may limit its recharging ability. Unkety Brook, however, flows over permeable material which could be a highly productive aquifer. The aquifer associated with Unkety Brook is likely to be the next most significant groundwater resource in Dunstable, after Salmon Brook's aquifer.

Groundwater and Resource Conservation

The plan of proposed open space acquisitions emphasizes protection of the Salmon Brook watershed, as have Conservation Commission easements and acquisitions in this area over the years. Protection of the Massapoag Ponds and the brook logically includes protection of the immediate upland area, which are all glacial stream deposits.

Strengthened development controls should include provisions for preserving streams and their embankments in outwash deposit areas as a means of protecting their effectiveness as recharge sources, and provisions to prevent pollution of groundwater from road salt and sewage effluent. Since these aquifer areas are often prime gravel extraction sites, new or extended gravel operations in town should be closely reviewed and supervised as to their effect on aquifer potential.

Because of the outstanding groundwater resources that have been mapped in Dunstable, the town would do well to adopt an aquifer protection bylaw, to prohibit potentially harmful uses from being sited in its aquifers.

Vegetation

General Inventory of Plants in Dunstable

Forested areas

Black Cherry *Prunus serotina*
Birch, Black *Betula lenta*
Cedar Red *Juniperus virginiana*
Maple, Red *Acer rubrum*
Pine, White *Pinus strobus*
Oak, Red *Quercus rubra*
Hazelnut *Corylus americanan*
Honeysuckle *Lonicera tatarica*
Huckleberry, Black *Gaylussacia baccata*
Poison Ivy *Toxicodentron radicans*
Lowbush Blueberry *Vaccinium angustifolium*
Maple-leaf Viburnum *Viburnum acerifolium*
Barberry *Berberis thunbergii*
Canada Mayflower *Maianthenum canadense*
Fern Bracken *Pteridium aquilinum*
Fern Marginal Wood *Dryopteris marginalis*
Indian-pipe *Monotropa uniflora*
Partridgeberry *Mitchella repens*
Hornbeam/Ironwood *Carpinus caroliniana*

Wetland Areas

Arrowwood *Viburnum recognitum*
Elderberry *Sambucus Canadensis*
Dogwood Silky *Cornus amomum*
Highbush Blueberry *Vaccinium Corymbosum*
Spicebush *Lindera benzoin*
Steeplebush *Spiraea tomentosa*
Blueflag Iris *Iris versicolor*
Blue Vervain *Verbena hastate*
Big Bluestem *Andropogon gerardi*
Boneset *Eupatorium perfoliatum*
Cardinal Flower *Lobelia cardinalis*
Maple, Red *Acer rubrum*
Fern Royal *Osmunda regalis*
Fern Interupted *Osmunda claytoniana*
Fern Sensitive *Onoclea sensibilis*
Fern Cinnamon *Osmunda cinnamomea*
Finged Sedge *Carex crinita*
Joe-Pye-Weed *Eupatoriadelphus maculate*
Woolgrass *Scirpus cyperinum*
Skunk Cabbbage *Symplocarpus foetidus*
Soft Rush *Juncus effuses*
Tall Meadow Rue *Thalictrum pubescens*
Tussock Sedge *Carex stricta*
Cattail *Typha latifolia*

Interrelationship of Vegetative Cover and the Physical Environment

All natural living systems tend to evolve towards equilibrium with the larger environment. Human intrusion, however, constantly upsets this evolution towards stability. Sound environmental planning attempts to guide development in a community so that this conflict is minimized where the natural landscape is not overwhelmed but allowed to absorb the disturbance caused by land use changes.

This process is best understood by understanding that all living environmental systems exist in groups of interrelated “communities”. This is due to the fact that each plant and animal species has a range of variation in environmental factors under which it will survive. This is called its ‘environmental gradient” (the range of tolerance of a plant to soil moisture is an example of such a gradient). The various combinations of soil, water, and topography form a variety of environments to which different plant and animal species are adapted. The distribution of these integrated vegetative and wildlife communities in Dunstable are governed by these physical conditions.

The influence of geological factors on the living skin is not only one-way, however. The vegetation cover of the landscape also has its effect on the earth through the modification of erosion from precipitation, temperature modification, soil buildup from decaying matter, and greater relative humidity. The existence of vegetative cover has the important effect of moderating environmental extremes, particularly in temperature ranges and in the flow characteristics of water.

In addition, the visual characteristics of the landscape are to a great extent governed by vegetative type. The feeling of openness or enclosure, color, texture, and seasonality is determined largely by vegetative types. A distinguishing characteristic differentiating plant and animal communities from other landscape features is their vulnerability to disturbance. Not being as stable as the non-living physical environment, the biological community needs careful consideration in town planning to avoid damage which may be irreparable or slow to recover from man-made disturbance.

There is a considerable variety of plant communities in Dunstable. For purposes of this study, these communities are subdivided into three major categories: forest cover, open field, and wetland.

Forest Land

Forests are by far the largest land use in Dunstable, covering 7,460 acres in 1985, or 70% of the Town's total land area. Dunstable lies within the Central Hardwoods - White Pine - Hemlock forest vegetation zone, as mapped by the Department of Environmental Management. Stands which are predominantly hardwood account for approximately 2,000 acres and predominantly coniferous stands cover about the same area. More evenly mixed hardwood/softwood woodland covers about 3,300 acres of the town. Softwood stands are primarily white pine, with hemlocks found on north-facing slopes. Hardwoods chiefly consist of various species of oak, maple, ash, hickory, locust and birch.

Most of Dunstable's forests are second succession growth. "Succession" is the term used to describe the evolution of plant communities over time until a community mix develops which is most adapted to the soil, hydrologic, topographic and climatic conditions of the site. As the process of community succession proceeds, the dominant species may alter the environment in such a way that makes possible the development of other species. The second species may alter the environment in such a way as to eliminate the first and allow a third species to develop and become dominant.

This process continues until a species develops which does not alter the environment in such a way as to make itself less competitive, and which represents the most stable plant community for those climatic and site conditions. This stable plant community is known as the "climax" stage of succession. It will tend to maintain itself until man or nature changes the environment in some way. When that happens, the process of succession will begin once more.

As was true for most of southern New England, Dunstable was probably cleared of its virgin forests by the early 19th century, and converted to farmland by the town's early settlers. A lithograph in the 1877 history of Dunstable shows a view from Chaney Hill towards the center of town. In it the landscape is entirely farm fields almost devoid of trees, except in the hills.

Towards the turn of the century, as farm fields became abandoned, sun-loving white pines developed into the climax forest community over much of the town. The MacConnell land use surveys of 1951 and 1971 show most of the town's forests as ranging from 20 to 40 feet in height in the earlier survey and predominantly 40-60 feet high in 1971. This height uniformity is explained by townspeople as due probably to the disastrous consequences of the 1938 hurricane on the region's forests, especially on its white pine stands. Dunstable's woodlands have now recovered from that violent storm, which literally blew down the white pine forest.

The second succession forest is more heavily dominated by hardwoods than was true of the first stage. Shade-tolerant sapling growth of oaks and maples in the old forest emerged as the dominant species, and crowded out the less shade-tolerant pines. In the 20 year span between 1951 and 1971, MacConnell's acreage statistics showed that predominantly hardwood stands remained stable at 2,200 acres, while stands where conifers dominated grew from approximately 1,000 acres to 2,200 acres. This acreage growth occurred mainly at the expense of acreage in mixed hardwood/softwood forests. This is probably due to the fact that in till soils, hardwoods tend to dominate, but in sandier sedimentary soils, white pine often retains its ascendancy in second succession woodland.

In their 1991 publication "Forest Productivity Mapping of Massachusetts", MacConnell et al. found that 87% of Dunstable's forest lands are considered prime, having the capability to grow white pine and red oak at high rates.

Being the least developed part of Dunstable, the eastern portion of the town would have the greatest extent of uninterrupted blocks of forest. This is borne out by the GIS Protected Lands map showing Chapter 61, 61A, and 61B lands are more clustered in the eastern part of the town. One sizable block of forest stretching between two towns is an area of 356 contiguous acres in the south along Westford Street near Massapoag Pond, where the town's Farnsworth Wildlife Refuge (96 acres) and the Staples Conservation Restrictions (15 acres) and 112 acres of land in Chapter 61 abut the Division of Fisheries and Wildlife's Fitch Wildlife Management Area (133 acres), most of which lies in Tyngsborough.

Throughout the town sufficient blocks of woodland exist to sustain hunting. At a community meeting, it was emphasized that there should be more awareness of hunting as an open space use, so that other users can take precautions in hunting season.

Public Shade Trees

Dunstable does not have a shade tree by-law. We do have a "Tree Warden" who inspects the Town's trees located on the street for decay, damage, disease or death. The Tree Warden also fields calls from the public regarding any trees that may need to be removed because they are a public safety issue. The Highway Department is called in by the Tree Warden, as well as outside firms when needed. The Town works with the utility companies when they need to do tree work in the public right of way.

Open Field/Agricultural Land

Open agricultural land, both active and inactive, accounted for 1,930 acres of Dunstable's total acreage in 1985, or 18 percent of the town's total land area, essentially unchanged since 1971. Surprisingly, though, the amount of actively tilled cropland increased somewhat during this time.

Pasture land and abandoned fields, or open land, were reduced over this time. Pasture land in town has traditionally been on rocky till soils. Because of this the process of succession is probably one of pasture/abandoned field/pine forest/hardwood forest.

There were only 75 acres of active orchards in 1985, down 10 acres from 1971. Dunstable has 133 acres in power lines, or that area of the right-of-way which is kept clear of woody vegetation.

Wetland Vegetation

The total acreage in wetlands in Dunstable is far greater than shown in the MacConnell study, easily five or six times the figure used. This is because MacConnell classifies the wetlands which have over a 30 percent tree crown cover as forest, and by far the greatest amount of wetland in Dunstable is wooded swamp.

Wetlands are a stage in landscape succession from glacial lakes to dry land. Ponds and lakes are one of the most temporary of geologic phenomena. Left to itself, nature begins the process of converting ponds to dry land as soon as they are formed. Streams deposit silt and nutrients in the ponds. The succession of aquatic plants on the pond bottom and shoreline soon evolves into ever more woody vegetation. Eventually the seasonal cycles of growth and decomposition over thousands of years transforms the pond into a wetland, then into dry land.

Dunstable has the full range of inland wetland categories. These include the following eight types and vegetative characteristics.

1. Pond: Ponds in Dunstable are standing bodies of water, often with sources of inflow and discharge from streams, springs, or watershed runoff. The characteristics vary, with some ponds with standing water year round on the larger streams, and some of a more seasonal nature which form during periods of high water table and runoff. These surface waters tend to be mildly eutrophic, that is, in the process of being filled by decaying plant matter and siltation. Two major plant forms are found in pond environments: submergents and surface vegetation. Submergents are plant life growing on the pond bottom (e.g. pondweeds, fanwort, waterweed, bladderwort). Surface vegetation are those plants with leaves principally on the water surface (e.g. white water lily, water smartweed, duckweed and liverwort). Swallow's and Shaw's Ponds are in this wetland category.

2. Deep Marsh: These wetlands have an average water depth between 6 inches and 3 feet during the growing season. Emergent marsh vegetation, (e.g. rushes, sedges, three-square, pickerelweed, bur-reed, arrow arum) is dominant with surface and submergent plants present in open water areas. Lower Massapoag Pond and the Salmon Brook Marshes are in this category.

3. Shallow Marsh: With an average water depth of 6 inches during the growing season, shallow marshes are dominated by robust or marsh emergents (e.g., cattail, reed, purple loosestrife, wild rice). Surface water may be absent during the late summer and abnormally dry periods. The lower reaches of Joint Grass Brook would tend to be classified as shallow marsh.

4. Seasonally Flooded Flats: These are extensive river floodplains where flooding to a depth of 12 inches occurs seasonally, with the soil remaining saturated throughout the year. Emergent vegetation is usually dominant, but shrubs and scattered trees may be present. The flood plains of Salmon and Unkety Brooks are of this wetland type.

5. Meadow: This wetland may have up to 6 inches of surface water during late fall, winter and early spring, with the soil saturated but exposed during the dryer seasons. Meadows have often been ditched for agricultural grazing and crops. Left undisturbed, these wetlands support vegetation of tall and short meadow emergents (e.g., woodgrass, wild millet, reed canary grass, spike rush, and sedge). The McGovern Farm Land near Main Street is meadow of this type.

    1. Shrub Swamps: Shrub growth dominates this wetland, with marsh and meadow emergents occupying open areas. In shrub swamps, the soil surface is flooded with up to 12 inches of water seasonally or permanently. Sections of Hauk Brook are in this wetland category. Vegetation in shrub swamps includes buttonbush, willow hardhack, sweetgale, leatherleaf, viburnum, highbush blueberry, alder and hornbeam.

    2. Wooded Swamp: This is the latter stages of wetland evolution form pond to terrestrial ecology. The largest wetland acreage in Dunstable is in this category. Red and silver maple, American elm, swamp white oak, pine oak, white pine and hemlock are the most common tree species.

6. Bogs: Bogs have their origin as ponds, and often still have a portion of standing water at the center. The distinguishing characteristic of bogs is that they consist of a floating mat of sphagnum moss, sedge and other plants that have slowly grown outward form the shore, eventually covering the whole pond. Bogs are often known as “quaking bogs” because this flexible mat will shudder and quake when walked upon. Hauk Swamp in Dunstable is such a bog. It is still in the process of covering its glacial pond.

    The plant communities of bogs are distinguished by their ability to survive in a low-nutrient environment. Bogs are impoverished of nutrients due to the lack of decomposition and the acidity of the mat environment. Vegetation includes sphagnum, azalea, black spruce, cranberry, high-bush blueberry, laurel, larch, leatherleaf, orchids, pitcher plants, and white cedar.

Rare, Threatened, and Endangered Species:
Investigations are ongoing to document the possible occurrence of a rare plant in Dunstable. No other rare plant species or plant communities are known in Dunstable at this time.

Goals for Protecting Vegetative Cover

The many important functions that plant cover performs can be summed up in one critical phrase: they moderate environmental extremes. When humans destroy this vegetative cover for their own purposes, they are removing this moderating influence and inviting extremes in environmental behavior. Increased runoff of storm water and consequent flooding is one result of decreasing vegetation cover within a watershed. Another result is decreased water quality due to loss of the filtration and nutrient uptake provided by vegetative buffers around water bodies.

Human activities in the environment are naturally disruptive, and there is little possibility of avoiding this disruption. What conservation planning can help accomplish, however, is to provide guidelines for future development in Dunstable, so that the most important stabilizing environmental elements are left intact. In this way, nature will be left free to modify environmental extremes induced by development and absorb their impact. Various planning controls can be implemented to assist in environmental stabilization. These include:

1. **Reservation of landscape environments which should not be disturbed**, to be left in their natural state. This can be accomplished through such ordinances as zoning, or, if this provides insufficient protection, through outright acquisition. Such areas would include natural drainage ways, such as wetlands and flood plains, and their continuous embankments.

2. **Controls to provide protection against environmental extremes due to development,** for example: subdivision controls requiring retention of excess runoff, open space buffers and prohibitions against building in hazardous areas or areas where health hazards might result from septic tank effluent disposal in unsuitable soils.

3. **Encouragement of sufficient environmental and plant variety to allow regeneration in disturbed areas.** Management practices in logging and in controlling vegetation in power line rights-of-way can assist in the regeneration of vegetative growth which provides improved wildlife habitats, recreational potential and visual quality. This can be implemented through cooperation among private interests and the Dunstable Conservation Commission.

4. **Preservation of vegetative buffers.** This is especially important in preserving visual continuity along Dunstable's roadways and water bodies. Through zoning and scenic road ordinances, a vegetative buffer can be encouraged to be left along roads. Through adoption of a Massachusetts Rivers Protection Act, vegetative buffers can be protected along the major streams. Also, towns have authority to establish their own river, pond, and stream protection bylaws, which can serve to protect vegetative buffers more thoroughly than is now possible under the Wetlands Protection Act. Cluster development regulations should also

incorporate provisions which will assure the preservation of any unique plant communities as open space within the tract. Public encouragement of certain farming practices which encourage wildlife habitats is another approach to buffer preservation.

5. **Preservation of those plant communities which are productive wildlife habitats.** This objective can be implemented through various approaches, from educational to acquisition. Specific areas which deserve protection are outlined in the next section on wildlife.

Rare, Threatened, and Endangered Species in Dunstable

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) listed nine (9) species under the threatened, special concern or endangered categories within Dunstable (per 2008 list).

Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Observation
Amphibian	Ambystoma laterale	Blue-spotted Salamander	SC	2000
Dragonfly/Damselfly	Gomphus abbreviatus	Spine-crowned Clubtail	E	2004
Fish	Notropis bifrenatus	Bridle Shiner	SC	1988
Mammal	Synaptomys cooperi	Southern Bog Lemming	SC	1976
Reptile	Emydoidea blandingii	Blanding's Turtle	T	2007
Reptile	Glyptemys insculpta	Wood Turtle	SC	2008
Reptile	Terrapene carolina	Eastern Box Turtle	SC	2004
Vascular Plant	Calystegia spithamaea	Low Bindweed	E	1928
Vascular Plant	Scheuchzeria palustris	Pod-grass	E	1928

Fisheries and Wildlife

List for Dunstable

Mammals

Raccoon	**Fisher**	**Bobcat**
White-tailed Deer	**Coyote**	**Red Fox**
Gray Fox	**Porcupine**	**Opossum**
Striped Skunk	**Beaver**	**Muskrat**

River Otter
Big Brown Bat
Gray Squirrel
Hairy-tailed Mole
Star-nosed Mole
White-footed Mouse
Meadow Vole
Meadow Jumping Mouse
Ermine
Woodland Vole
Moose
Black Bear
Chipmunk
Eastern Mole
Eastern Cottontial
Deer Mouse
Norway
Norway Rat
Mink
Little Brown Bat
Red Squirrel
Masked Shrew
Northern short-tailed Shrew
Woodchuck
Northern Flying Squirrel
Southern Bog Lemming
House Mouse
Long-tailed Weasel

Amphibians & Reptiles

Eastern Painted Turtle
Eastern Box Turtle
Blanding's Turtle
Marbled Salamander
Red-backed Salamander
Bullfrog
Wood Frog
Pickerel Frog
Northern Redbelly Snake
Eastern Ribbon Snake
Snapping Turtle
Wood Turtle
Yellow-spotted Salamander
Northern Two-lined Salam.
Red-spotted Newt
Green Frog
Gray Treefrog
Northern Water Snake
Eastern Garter Snake
Northern Ringneck Snake
Red-eared Slider
Blue-spotted Salamander
Four-toed Salamander
Northern Leopard Frog
Eastern American Toad
Northern Spring Peeper
Northern Black Rader
Northern Brown Snake
Eastern Milk Snake

Birds

Wood Duck
Great Blue Heron
Kingfisher
Mallard Duck
Red Tail Hawk
Cooper's Hawk
Broad-winged Hawk
Wild Turkey
Pileated Woodpecker
Hairy Woodpecker
Herring Gull
Eastern Screech-Owl
Common Nighthawk
Northern Bobwhite
American Woodcock
Rufous-sided Towee
Hermit Thrush
Baltimore Oriole
Great Crested Flycatcher
Barn Swallow
American Crow
Tufted Titmouse
Brown Creeper
Winter Wren
Blue-gray Gnatcatcher
Hermit Thrush
Gray Catbird
Pied-billed Grebe
Green-backed Heron
Canada Goose
Common Merganser
Northern Harrier
Northern Goshawk
American Kestrel
Ring-necked Pheasant
Red-bellied Woodpecker
Yellow-bellied Sapsucker
Barred Owl
Great Horned Owl
Chimney Swift
Killdeer
Mourning Dove
Pine Siskin
Song Sparrow
Eastern Kingbird
Purple Martin
Bank Swallow
Common Raven
Red-breasted Nuthatch
Caroline Wren
Marsh Wren
Eastern Bluebird
Wood Thrush
Northern Mockingbird
American Bittern
Black-crowned Night Heron
American Black Duch
Osprey
Sharp-shinned Hawk
Red-shouldered Hawk
Turkey Vulture
Ruffed Grouse
Downey Woodpecker
Norhtern Flicker
Common Barn Owl
Northern Saw-whet Owl
Ruby-throated Hummingbird
Cuckoo
Indigo Bunting
Wood Thrush
Red-eyed Veerie
Eastern Wood-Pewee
Tree Swallow
Blue Jay
Black-capped Chickadee
White-breasted Nuthatch
House Wren
Golden-crowned Kinglet
Veery
American Robin
Brown Thrasher

Cedar Waxwing
Blue-winged Warbler
Yellow Warbler
Yellow Rumped Warbler
Prairie Warbler
American Redstart
Scarlet Tanager
Evening Grosbeak
American Tree Sparrow
Song Sparrow
Dark-eyed Junco
Eastern Meadowlark
Orchard Oriole
House Finch
American Goldfinch
European Starling
Nashville Warbler
Chesnut-sided Warbler
Pine Warbler
Black and White Warbler
Ovenbird
Northern Cardinal
Indigo Bunting
Chipping Sparrow
White-throated Sparrow
Bobolink
Common Grackle
Northern Oriole
Common redpoll
Red-eyed Vireo
Northern Parula
Magnolia Warbler
Black-throated Blue Warbler
Black-throated Green Warbler
Common Yellowthroat
Rose-breasted Grosbeak
Rufous-sided Towhee
Field Sparrow
House Sparrow
Red-winged Blackbird
Brown-headed Cowbird
Purple Finch
Pine Siskin

Wildlife Distribution

Wildlife is to be found wherever a specific plant community provides a hospitable habitat. To fulfill the needs of the life cycle, a wildlife habitat must contain three essential elements: food, cover and water. Wherever these three elements are found together in the landscape, a concentration of various wildlife populations will be found also. For these three elements to be present, a landscape must have a sufficient variety of vegetative communities. This variety is most often found where two different plant communities meet, e.g., at the edge of field and forest, or pond shoreline and marsh. This edge is known as the landscape "ecotone."

The tendency for the ecotone to have a greater variety and diversity of wildlife is known as the "edge effect." The overlapping of the two plant communities provides greater environmental variety. Often, many species of wildlife require two differing habitats as part of their life history. Partridge, for example, require three plant communities to complete their seasonal life cycle needs: (1) shrubs and low cover for rearing broods and for summer and fall foods, (2) hardwoods for nesting and for fall winter and spring foods, and (3) evergreens or brush for winter cover. Even animals normally considered aquatic for much of their life cycle, such as the Blandings turtle, require uplands for breeding, since dry sandy soils are the preferred nesting sites.

For most species, those habitats which are desirable for providing cover (for hiding, sleeping, rest and breeding) are not the same communities which are most productive of food. This is especially true of bird populations, since most species require trees for nests and cover but feed largely on low-lying vegetation. Studies have found that up to 40 percent of common bird species in some locations were found to be either partially or entirely ecotonal.

Inventory of Wildlife Habitats in Dunstable

1. Forest-Streambed Habitat: This environment supports white-tailed deer, fox, grey squirrel, red squirrel, snowshoe hare, cottontail rabbit, raccoon, mink, beaver,

otter, small rodents and carnivores. According to local residents, even wildcat have been sighted on Horse Hill. Vegetative food sources here are hardwood sprout growth, nuts, seeds, bark, and shrub vegetation.

2. Woodland-Field Habitat: Abandoned fields which are sprouting sapling growth and the edges of fields where they abut woodland are especially productive areas of wildlife, especially gamebirds and songbirds. Species to be found here include partridge, quail, pheasants, woodcock, and many of the mammals of the forest-streambed habitat. The primary foods for these species are various weed seeds, agricultural crops, especially corn, various vegetable parts of woody plants, and insects and worms.

3. Woodland-Wetland: This is the primary habitat for many waterfowl and most songbirds. Kingfishers, killdeer, great blue heron, buteo hawks, owls, as well as innumerable songbirds, are found here. Since wetlands and open water bodies are important to all species for water and for the vegetation they produce, this environment has a wider range of animals that use it than just those listed. Songbirds subsist on a great variety of weed seeds and seeds and fruit of woody plants, as well as insects and worms. The other birds listed are birds of prey and subsist principally on small mammals or aquatic life and fish.

4. Marsh-Open Water Habitat: These wetlands are shrub or deciduous marsh along streambanks or on pond shorelines. This is the main habitat of waterbirds including the common mallard, black duck, Canada goose, and American bittern. Their diet consists mainly of aquatic wetland vegetation.

5. Stream Habitat: Fish and aquatic mammals are the primary wildlife found in the streams of Dunstable. Rainbow, brown and brook trout, large-mouth bass, and pickerel are the large game fish found in the town's streams. The Division of Fisheries and Game stocks Unkety and Salmon Brooks.

6. Vernal Pools: These ephemeral, often small, springtime wetlands play a crucial role in the life cycle of many amphibians, serving as fish-free breeding waters where several species of frogs and salamanders can lay their eggs without the danger of having them devoured by fish. Some creatures such as the wood frog, fairy shrimp, and several salamanders are entirely dependent on vernal pools for successful breeding. With amphibians in decline world-wide, it is critical to identify vernal pools so they can be protected under the Wetlands Protection Act. Rare reptile species such as the blue-spotted salamander are known to occur in vernal pools.

Corridors for Wildlife Migration

Dunstable's major wildlife corridor is the Nashua River, which is recognized as having international importance as a migratory flyway. It is named as a priority for protection under the North American Waterfowl Management Plan, an agreement between Canada, Mexico, and the United States. During the spring and fall bird migrations, the

Nashua River is the second most commonly followed flyway in Massachusetts, after the coast.

Within the town itself, Salmon Brook and Massapoag Ponds and their associated wetlands are likely to be significant wildlife corridors, serving as the central spine of open space to which most of Dunstable's network of wetlands connect.

Rare, Threatened, and Endangered Species

State-listed rare species are found in the stream and wetland habitats of Dunstable. There are five areas in the town where state-listed animals have been documented, including rare turtles, salamanders, birds and the bog lemming. Studies are ongoing that document vernal pools where the blue-spotted salamander has been observed to breed, as well as Blanding's Turtle studies in the Unkety Brook area. Several state-listed species have been observed throughout the town and reported to the NHESP. For a complete list of rare, threatened or endangered species, please see list a couple of pages back.

Goals and Objectives for Protecting Wildlife Habitats

Several approaches in public policy can be followed to preserve habitats and make existing vegetative cover more hospitable habitats. The goal here should be the creation or preservation of diversity in plant cover, especially ecotones.
Specific actions include:

1. **Preservation of wetlands and surface water resources, and their contiguous vegetative buffer around them.** Wetland swamps and marshes are perhaps the most important productive wildlife area. In addition to the wetland itself, sufficient upland vegetation should be included to preserve the two vegetative communities which make up that ecotone.

2. **Encouragement of forestry practices which create ecotones.** These practices include creation of openings in forest stands to encourage sprout growth, especially soft maple. This is especially critical for those animals, such as deer, whose winter diet consists of tender sprout growth of trees and shrubs.

   In addition to the above, forestry practices could encourage some mixed stands where one species is being forested. In hardwood stands, evergreens could be planted, and openings created in coniferous stands to allow hardwoods to emerge. Dunstable's woodland is generally mixed to some degree, but encouragement of evergreen cover and hardwood food sources where they are needed would improve the forest habitats. In addition, old dead trees should be left for dens and nests, and additional planting of native nut or fruit-bearing trees would help to supplement food sources.

3. **Hedgerows along agricultural field edges could be left to provide food and cover** for small mammals, game birds, and songbirds. Birds can be effective agents for pest management, with all the insects they consume.

4. **The town should encourage the owners of the power line rights-of-way to allow mixed shrub and sapling growth** within these areas, even if only along the woodland edge.

5. **Old abandoned orchards should be preserved.** They are productive wildlife habitats, especially for bluebirds.

6. **In developed areas, the edge between cleared areas and woodland should be allowed to grow into shrubs.** This can be done through educational campaigns with individual owners and through design controls in subdivision regulations that address woodland preservation.

7. **Land owned by the Conservation Commission and the town should be managed using the suggested forestry practices.**

Scenic Resources and Unique Environments

Scenic Landscapes:

The general rural landscapes noted in the section on Landscape Character contain some specifically noteworthy areas. One part of Dunstable is mapped in the Massachusetts Landscape Inventory as a Distinctive Landscape — the corridor along the Nashua River from East Pepperell to the state line. This free-flowing reach of the Nashua River has also been named for potential designation under the Federal Wild and Scenic Rivers Act. Efforts should continue to permanently protect this outstanding area.

The rural roadside views along Route 113 from the town center to the Tyngsborough line were noted in community meetings as being an important scenic landscape to protect, known as the "Gateway to Dunstable". The stone walls, venerable trees, open fields, active farms, historic buildings, and rolling forested hills visible along this winding road form the essence of Dunstable's rural character. This stretch of Route 113 and the countryside it traverses are an organic whole. This road lies within its landscape as it has for centuries, and offers an opportunity for mall-weary travelers to slow down and savor the real New England. It is of great concern in Dunstable that this roadside landscape should remain intact.

Particular hilltops named in community meetings as being worthy of protection are Blanchard, Drake, Forest, Horse, Nuttings, & Spectacle Hills. These hills are valued for the views from their tops and from various points around the town.

Major Characteristic or Unusual Geologic Features:

Dunstable has some major characteristic glacial landforms: drumlins and outwash formations. Of particular note are the steep slopes of the kame terraces that rise above the wetlands bordering Salmon Brook. These features are shown on the Surficial Geology map.

Cultural and historic areas:
The 1976 Plan inventoried some 134 historic sites: mills, homesteads, schools, taverns, stores, cemeteries, quarries, the church, and an Indian Battle site on Hound Meadow Hill. Most of these sites have historic buildings still extant, and are on the Massachusetts Historic Register, but no research has yet been completed to enter any of them into the Federal Register. One historic building, the old Winslow Schoolhouse on Main Street near the Tyngsborough line, is home to the Dunstable-Tyngsborough Historical Society. As befits an agrarian community, most of the historic homesteads are scattered about the town, but in the town center, there is a cluster of historic sites. This is an area well worth protecting through a Historic District. Evidence of earlier inhabitants is here, too. Not far north of the center lays an old Indian grinding stone.

Areas of Critical Environmental Concern:
As of December 11, 2002 all of Dunstable from Salmon Brook west to the Nashua River was designated as part of the larger Petapawag Area of Critical Environmental Concern (ACEC) by the Secretary of the Executive Office of Environmental Affairs (EOEA). [There is a map of the exact boundary of this ACEC at Town Hall in the Conservation Commission office.] In its entirety the Petapawag ACEC covers about 25,630 acres in five towns. Designated by the EOEA Secretary, at the same time as the Petapawag, was another adjoining ACEC, the Squannassit ACEC: which is about 37,450 acres in nine towns. The two new ACEC's were cited as containing an extraordinarily diverse concentration of highly significant environmental resources.

The Petapawag ACEC within Dunstable has a tremendous array of resources with its water bodies, aquifer, wetlands, floodplains, productive farm and forest lands, historic places, and special scenic and recreational areas. Notably, the Unkety Brook area was recognized as the premier region in the Commonwealth for Blanding's and other state-listed rare and threatened turtles (as well as other herpetafauna). Also, there is a state-designated Natural Heritage and Endangered Species Project (MA NHESP) Priority Habitat/ Rare Wetlands Wildlife Habitat areas along Unkety Brook in southwestern Dunstable. Furthermore, and of no surprise given the above, the great majority of this same area is a state-designated MA NHESP BioMap core area with still additional land designated as BioMap supporting landscape.

To qualify as an ACEC, an area must include at least four natural resources, and the ACEC designation must be strongly supported by local people. Once an area becomes an ACEC, any project that requires state approvals has to be reviewed through MEPA, the Mass. Environmental Policy Act. An ACEC does not apply to local controls, which continue as before. Having an ACEC can increase local control. By putting the state on notice that the resources in this area deserve protection, an ACEC designation gives local citizens more chance for input into the state permitting process. This can strengthen the town's control of its destiny, by involving local review of state actions. An ACEC would chiefly affect large projects, often the ones that could benefit the most from more careful review.

Achieving ACEC designation required some two or more years of work to research all

the area's resources and document them to prepare a nomination. The Petapawag ACEC involved coordination among the towns of Ayer, Groton and Tyngsborough as well as Dunstable. The process of nominating and designating an ACEC was an excellent way to raise public awareness of the communities' valuable natural resources.

Environmental Challenges

Dunstable is fortunate in that the Town itself does not have any significant environmental challenges. There are no hazardous waste sites in Town. However, in 1987 there was some groundwater contamination in the south east corner of the Town from the Charles George Landfill in Tyngsboro, MA. This Superfund site has been capped and the area in Dunstable restored. Dunstable's own landfill was closed and capped in 1998. Groundwater monitoring is on-going yet no problems have arisen. In that location is now a Transfer Station to collect trash, and recycle glass, tin, aluminum, 1 & 2 plastics, paper and cardboard. Several times a year there is a large item drop-off, for items such as appliances, tires, furniture, etc. Household hazardous waste, such as paint, oils, batteries, pesticides, etc. are collected annually in collaboration with the Town of Tyngsboro at the Tyngsboro Highway Department.

The following are some of the issues that the town may face:
Agricultural sprays and chemicals are not currently monitored by the Board of Health. The Board has not received any reports of misuse of such materials at the farms or orchards where they are likely to be used.

Petroleum products: There is a gasoline storage tank for the gas station at the General Store on Pleasant Street. It is lined and monitored. Undoubtedly, there are buried tanks on other properties throughout the town, but no such controls exist regarding them. They are a real but untracked threat to groundwater.

The Board of Health is concerned about the possible spillage of motor oil and solvents at local garages, farms, and other private properties due to many self-repair and oil change activities. There is only one auto repair facility in town: West's Auto next to the fire station on Pleasant Street in the town center. What was previously Riopelle's Garage on Pleasant Street across from the power sub-station is now the Town Garage. Vehicle maintenance occurs on this property. There are several large working farms in town and it is likely that vehicle and equipment repairs occur there as well.

Point and Non-point Water Pollution
There are no NPDES dischargers in town. Water pollution is currently minimal. Dunstable is essentially free of large sources of contaminants. Concerns are present however regarding salt from winter roadways and potential E.coli loading from farms.

Septic Systems: Overall, the low density of housing in Dunstable and the 2 acre zoning, limits the groundwater contamination by nutrients (nitrates and phosphorus). Dunstable's private water wells and private sewage disposal require the town and its residents to be vigilant to avoid contamination and malfunctions. Board of Health regulations and careful enforcement of Title V by the Board of Health help to assure

continued environmentally safe operation of wells and septic systems. The new requirements for septic system testing in conjunction with sale of a house, while inconvenient in some cases and an unexpected homeowner expense in other cases, helps assure continued safe operation of systems and the resultant protection of the groundwater. There are some concerns about the age and concentration of septic systems around Lake Massapoag. But as the area develops or re-develops, old systems are being upgraded or replaced.

Lawn chemicals: The potential for improper use exists. The only identifiable area of any size subject to these chemicals is the portion of Sky Meadow Golf Course that extends into Dunstable from Nashua. The drainage from here flows north into Nashua.

Agricultural runoff: Problems have not been experienced off-site. Some contamination of the stream that flows through the McGovern farm barnyard may be assumed. This is a historic condition dating from the first use of the location. The farm maintains a lush grassy meadow downstream of the barn. This serves as a filter to trap sediments washed out of the barn yard. The Tully Farm on Fletcher and Hollis Streets has considerable areas with underdrains to improve cropping capacity of the fields in wet years. There may be some contamination of these drainage waters. But the owner has an extensive vegetated area beyond the limits of the fields through which all drainage must pass; there is again the potential to contain contaminants on site.

Potential water pollution from outside the town:
There is concern about the water quality of the two main streams that drain parts of other towns through Dunstable: Salmon Brook and Unkety Brook. Both are over known or presumed aquifers which have potential for municipal supply. The threat to Unkety Brook would come from continued development in Pepperell and Groton. Salmon Brook flows out of Lake Massapoag, which could be subject to eutrophication due to development in its watershed, most of which lies in Groton and Tyngsborough. The Massapoag Rod and Gun Club have regularly sponsored water quality testing of the lake through the Massachusetts Waterwatch Partnership. Testing is done monthly from April through October. The lake is in no danger from acid rain: its pH is 6.8 and it has adequate alkalinity. At times in the summer, dissolved oxygen measurements indicate that the lake bottom water has insufficient oxygen. Massapoag is quite deep. The Club, which owns the dam that holds back the Pond, periodically draws down the water in winter to reduce weed growth. These efforts have met with some success. Phosphorus is measured once a year; it is unclear whether there are any trends of this nutrient. There may be some failing septic systems as seasonal camps have been converted to year-round use. From 1975 to 1988, the town of Groton had a landfill in the upper part of the Massapoag watershed near Cow Pond Brook, the main tributary leading into Massapoag Pond. It was identified in the 1976 Plan as a potential source of pollution; so far, this has not been borne out. In 1988, this landfill closed, prematurely filled due to an excess of cover material and a higher than expected proportion of demolition debris. Both of these factors would tend to reduce the amount of leachate from this source; demolition debris tends to be more inert than household trash. Ongoing monitoring since the landfill was closed continues to show no significant contamination. Iron levels found

are at typical background levels. Over the past 10 years, monitoring wells up gradient of the landfill show the same results as those down gradient; there is no trend of any increase in contamination.

Invasive Species: There are some strands of the invasive species Japanese Knotweed on several of the Conservation properties, specifically at the newly cleared top of Blanchard Hill, and at Flat Rock Conservation Area. They are small enough to be tackled, but presently, there is not a management plan in place to do so. These plants will quickly spread if left unmanaged. Purple Loosestrife persist in many of the wetland areas and is quite widespread. Eradication of this would be a very difficult task. Other invasive species that are found throughout the town are Oriental Bittersweet, Phragmites, Norway Maple, Russian Olive and Garlic Mustard.

Erosion: Erosion is not a problem in town. Many years ago when there were active gravel pits, erosion potential was significantly higher. Presently, those sites have either been developed or restored (intentionally or naturally). There are no active gravel operations in town anymore. Concerns regarding erosion are primarily on trails caused from off-road vehicles, & at some of the towns bridges or culverts caused by flooding.

Chronic Flooding: One area of chronic flooding is on River St. The low profile of the roadway at the crossing along with beaver activity, has caused washout of the road a few times. The culvert has been replaced/repaired and that has alleviated this issue to a degree. Another area of flooding is at the bridge over Salmon Brook at Main St. The bridge in poor condition and the flooding has exacerbated the condition.

Sedimentation: Sedimentation in general is not an issue. There are some localized areas where roadways cross wetlands and road sand accumulates. The slope under the power lines in the Spaulding Procter land is eroding due to off-road vehicles and is entering the Salmon Brook. Another area of erosion is the back side of Blanchard Hill where the trail ties into Flat Rock Preserve, due to vehicles.

Forestry: Dunstable's Conservation Commission, Forestry Commission, Land Trust and private land owners are very active in managing their forests.

Environmental Equity Issues: The parcels of land protected as Open Space either as conservation areas, wildlife preserves, APR land, or recreational sites are fairly well distributed throughout the town. Lands used for recreation i.e. sports fields, are few and concentrated in the center of the town. Yet, Dunstable is regional with the Town of Groton and many of the recreational areas are in Groton. The Recreational Committee is active in Dunstable in maintaining the properties and pursuing other locations for additional playing fields and possible town beach.

In looking at the Open Space map, there are large areas of land that are not protected, yet most of those areas are active farm land. There is always the concern of what will happen with these lands should the farms not persist. Continuing to foster good relationships with the farms and their planning are of great importance.

Section 5
Inventory of Lands of Conservation And Recreation Interest

SECTION 5 - INVENTORY OF LANDS OF CONSERVATION AND RECREATION INTEREST

"Protected Land" refers to land that is dedicated open space, i.e. land that can never be developed, that must be maintained in some form of open space in perpetuity. Such land is "protected" by State Statute and the State Constitution. Examples would include land held by the Town Conservation Commission; the Town Forests; the Mass Division of Fish & Wildlife "wildlife management areas"; farmland placed under "APR" (Agricultural Preservation Restriction Act); land placed under a conservation easement (Conservation Restriction Act).

This does not include land placed under Chapter 61 (forestry), 61A (agriculture), or 61B (recreation) as these currently use classifications are not in perpetuity.

Dedicated open space is often associated with passive recreation and wildlife habitat: trails for hiking, skiing, horses, and scenic vistas; sustainable wildlife populations for biodiversity, bird watching, fishing and hunting. Certainly it is all of that.

In a more fundamental sense, however, permanent open space is a measure of the environmental health of a town and its people. Forests provide clean water, clean air, noise reduction, and carbon sequestration. Fields provide similar benefits, and help retain some of Dunstable's rural aspect. Wetlands purify water, prevent flooding and maintain stream flows. Open Space is vital to aquifer (ground water) recharge, especially important in a town like Dunstable which is wholly dependent on well water.

Finally, open space easements can sustain locally grown produce (agriculture) and forest products. Such easements can provide all of the elements listed above, while supporting the local economy with jobs and taxes.

At the time of Dunstable's 1976 Open Space and Recreation Plan, the town had only 341 acres of conservation land. At the time of 1998 Plan update there were four times that amount or nearly 1,600 acres of permanently protected lands. And, as of July 2010 there are 2,763 ± acres of Town, State and private land permanently protected for conservation, recreation, and agriculture. This success is due to the public-spirited citizens who formed the Dunstable Rural Land Trust, to the generous landowners who have given land/money to the town and the Trust, to dedicated members of the town's boards and commissions, and to state conservation agencies. Progress since 1998 shows in the Appendix Record of Accomplishments. Some of the newly acquired parcels include: the Stoddard Conservation area – 32 acres of donated land off Main Street, the Amos Kendall Conservation area – a 25 acre parcel off High Street and Flat Rock Hill Conservation Area – a 150 acre parcel off Mill Street, both purchased with the help of state grants, CPA funds, and town funding. And, our newest parcel, the Howard's Brook Conservation area – an 11 acre parcel purchased with CPA, DRLT and private funding.

Recognizing the effect of full market valuation on open space land (notably an

acceleration in land subdivision), some decades past the state legislature established special reduced valuation categories for lands in open space use. These are known as the Chapter 61, 61A and 61B tax classification programs: respectively: Chapter 61 equals Forest Management, 61A equals Agriculture, and 61B equals Open Space Recreation or Wildlife Habitat.

A lower assessment on lands in open space use is fair because public service costs are far lower for land in this use. Taking into consideration the closest Massachusetts town to Dunstable, the American Farmland Trust (2007 report) found that farm/open land generated more revenue than they required in services, while residential uses cost the towns more. For every dollar paid in taxes, farm/open land only required 39 cents in services, while residential land required $1.15 in services for every tax dollar paid. Because the town values its rural character, the Board of Assessors has encouraged owners of large parcels to classify them under the appropriate category of Chapter 61, Chapter 61A, or Chapter 61B. Dunstable has 2,222 acres classified in Chapter 61A. Another 884 acres are classified as managed forest in Chapter 61. Considering that Dunstable's largest land use is forest (168 acres), Chapter 61 land is a relatively small proportion of forested land. There are just 44 acres in Chapter 61B. Although these special property tax classifications do not serve as permanent open space conservation measures, their prevalence indicates that many Dunstable landowners intend to continue farming and forestry.

Access for People with Disabilities (Universal Access)

A few of the town's conservation and recreation properties meet this need. The Shaw Conservation Area near the town center on Pleasant Street has adequate parking with a good view of the Mill Pond for bird watching and wildlife observation. The Unkety Woods Preserve has universally accessible paths and adequate parking. Regarding active recreation areas, the present Town Field has a universally accessible pathway. The Larter Field athletic facilities are wheelchair accessible as is the Rail Trail. For more information see Appendix A: Americans with Disabilities Act / Section 504 Self-Evaluation.

INVENTORY of LANDS of CONSERVATION and RECREATION INTEREST
PUBLIC and NON-PROFIT LANDS

Site	Owner	Man.	Acres	Funding	Zone	Public Access	Univ. Access	Activ/Uses	Degree of Protection	Assessor Map	Cond	Recreation Potential
Allgrove Open Space	DRLT	DRLT	15.00	gift (Allgrove)	R-1	thru Unkety Woods	none	W,H	perpetuity	8-27-0	E	
Chaney Open Space	DRLT	DRLT	8.00	gift (Chaney)	R-1	thru Flat Rock Hill Cons.	none	H,T	perpetuity	10-27-0	E	
DRLT Wildlife Refuge Open Sp 107 Dixie 19.05 Gregg 79.59 Shaw 12.97 Gregg 20.21 Shaw 14.02 Gregg	DRLT	DRLT	330.76	private (Gifts/Bros) gift (Gregg)	R-1	Fletcher & Main St.	none	W,H,F,T XC,HR,SV	perpetuity	8-14-0 6-3-0/5-6-0 5-12-15.2 5-12-3	E	
Flat Rock Hill Quarry Open Sp	DRLT	DRLT	88.00	cluster open space/th	R-1	thru Arched Bridge	none	H,T	perpetuity	10-25-?	E	
George R. McGovern Open Sp	DRLT	DRLT	14.00	gift (McGovern)	R-1	Groton St.	view	W,H,F	perpetuity	5-10-1-0	E	
Horse Hill Quarry Open Space	DRLT	DRLT	38.15	cluster open space	R-1	Hall St.	none	H,T	perpetuity	14-60-0	E	
Howard/Woods Open Space	DRLT	DRLT	39.55	gift (Woods)	R-1	Hall St.	none	W,H,T	perpetuity	14-55&35O	E	
Kennedy Open Space	DRLT	DRLT	11.47	gift (Kennedy)	R-1	Howard's Brook	none	H,T	perpetuity	7-11-11&52?	E	
Lupien Open Space	DRLT	DRLT	5.00	private	R-1	thru Gardner Cons.	none	W,H,T	perpetuity	1-30-0	E	
Watson Open Space	DRLT	DRLT	45.60	gift (Watson)	R-1	thru Groton Cons Trust	none	H,T	perpetuity	1-14-0	E	
W. Brook Open Space	DRLT	DRLT	7.34	cluster open space	R-1	thru Sayer Cons.	none	W,H	perpetuity	11-83-0	E	
Off River St Open Space	DRLT	DRLT	11.60	gift (Tully); 33.09 state	R-1	Unkety Brook corridor	none	W,H,F	perpetuity	1-14-5	E	
Randolph Open Space	DRLT	DRLT	0.16	gift (Randolph)	R-1	none	none	W,H	perpetuity	10-40A-0	E	
Robbins Farm Open Space	DRLT	DRLT	36.85	cluster open space	R-1	Hollis St, Robbins Rd.	none	H,T	perpetuity	1-19-0	E	
Sweetapple Hill Open Space	DRLT	DRLT	1.00	private	R-1	thru Gage Forest	none	H	perpetuity	20-21-0	.	
Tully Farm Open Space	DRLT	DRLT	50.59	gift (Tully)	R-1	thru DRLT Wildlife Ref	none	W	perpetuity	5-2-1&2-0	E	
Tully Open Space	DRLT	DRLT	3.00 760.47	gift (Tully)	R-1	thru Arched Bridge Cons. Area or by boat- Salmon Brook	none	W,H,T	perpetuity	15-18-0	E	
Amos Kendall Cons. Area	Town	CC	25.16	town & state grant	R-1	High St	park/view	W,H,HR,F,T	perpetuity	15-0-1	E	trails to brook/turtle nesting sign's
Beech Conservation Area	Town	CC	11.40	town	R-1	thru Town Forest	none	W,H,F,T,XC	perpetuity	17-32E-0	E	
Betham Forest Cons. Area	Town	CC	17.78	gift (Betham)	R-1	none	none	H	perpetuity	23-28-2	E	
Birch Conservation Area	Town	CC	10.00	gift (Birch)	R-1	Westford St	none	W,H	perpetuity	18-22-0	E	improvements for observation of wildlife
Blanchard Hill Cons. Area	Town	CC	37.96	cluster open space	R-1	Sky Top Lane	none	W,H,T	perpetuity	10-24-1?	F	additional trail loop/tools
Chapman Conservation Area	Town	CC	1.70	town	R-1	Pleasant St.	none	H	perpetuity	7-4-0	E	
Craven Conservation Area	Town	CC	2.22	gift (Craven)	R-1	Pleasant St.	none	W,H,T	perpetuity	7-26-0	E	turtle nesting site development
Curtis Conservation Area	Town	CC	3.00	cluster open space	R-1	Pleasant St.	none	W,H,F	perpetuity	12-51-0	E	
English Wildlife Refuge	Town	CC	34.00	gift (English)	R-1	Westford St	none	W,H	perpetuity	18-30-0	I	trail for observation of wildlife
Farnsworth Wildlife Refuge	Town	CC	44.35	gift (Farnsworth)	R-1	Westford St	none	W,H,TM	perpetuity	18-34-0 18-36-0	E	wildlife habitat enhancement in collaboration with Mass F&W
Flat Rock Hill Conservation Area	Town	CC	148.00	CPA, gift (DRLT) state grant town fund	R-1	Mill St	see ADA	T,XC,TM HR,H,SV	perpetuity	11-81-0	E	tree ID markers along Blanchard Hill trail
Fox Run Conservation Area	Town	CC	2.14	cluster open space	R-1	Lee Marie Dr. Block 5	none	W,H	perpetuity	12-46-2	E	
Gawne Conservation Area	Town	CC	3.00	town	R-1	Pleasant St	none	W,H	perpetuity	7-31-0	E	
Goldthwaite Cons. Area	Town	CC	5.33	town	R-1	Parkhurst St	none	W,H,F	perpetuity	13-65-0	E	
Hogg Conservation Area	Town	CC	27.00	town & gift (DRLT)	R-1	via Salmon Brook	none	W,H,F	perpetuity	15-29-0	I	trail through pine plantation

Site	Owner	Mgr.	Acres	Funding	Zone	Public Access	Univ. Access	Activities/Uses	Degree of Protection	Assessor Map	Cond	Recreation Potential
Holmes Conservation Area	Town	CC	7.00	town & state grant	R-1	boat only	none	W,H,F	perpetuity	[illegible]	E	
Howard's Brook Cons. Area	Town	CC	10.83	CPA, gifts (DRLT/ residents)	R-1	Hardy St	See ADA	W,H,T XC,HR	perpetuity	20-30-1	I	trail system including walkway across wetland & brook
[illegible] Cons. Area	Town	CC	21.13	cluster open space	R-1	Mill St & Swallow Ln	none	W,H,F	perpetuity	11-54-0	E	
Kennedy Cons. Area	Town	CC	50.00	town (Timber Fund)	R-1	Stone Arch Bridge or boat at Flat Rock	none	W,H,T,F HR,TM	perpetuity	11-63-0 16-15-0	E	
Keyes Meadow Cons. Area	Town	CC	18.00	town	R-1	Groton St	none	W,H,F	perpetuity	8-25-0	F	
Meeting House Hill Cons Area	Town	CC	13.48	town (land/timber)	R-1	Main St.	none	H, Hist.	perpetuity	23-31-1	[illegible]	wildlife observation/historical marker
Parkhurst St Cons. Area	Town	CC	16.58	cluster open space	R-1	Parkhurst St	none	W,H,F	perpetuity	13-47-12/13	E	
[illegible] Cons. Area	Town	CC	30.00	tax title	R-1	Kennedy Cons. Area or by boat	none	W,H,T F,HR,TY	perpetuity	11-63-0 11-84-0	E	
Sargent Conservation Area	Town	CC	3.00	town	R-1	Main St.	none	W,H,F	perpetuity	12-115-0	E	
Sawyer Conservation Area	Town	CC	5.00	gift (Hogg)	R-1	Main St.	none	W,H,F	perpetuity	12-2-0	E	
Shaw Conservation Area	Town	CC	1.10	town 1 acre + across water rights	R-1	Pleasant St.	walk, pond view	W,H,F,D picnic/skate	perpetuity	17-43-0	E	
Spaulding-Proctor Reservation	Town	CC	46.44	gift (Mason & Roxbury Latin School)	R-1	Pleasant St & Groton St.	none	W,H,T,HR F,B,TM		12-63-0 13-1-[illegible] 13-60-0	E	sign & parking [illegible]
Stoddard Conservation Area	Town	CC	32.01	gift (Stoddard)	R-1	Main St.	none	W,H,T	perpetuity	11-23-0	E	
Stone Arched Bridge Conservation Area	Town	CC	12.24	gift (Bixby)	R-1	High St has boat access - Salmon Brook	none	W,H,T,XC F,SW,B	perpetuity	15-17-0	E	signage, parking area
Unkety Brook Cons. Area	Town	CC	60.85	cluster open space	R-1	Adams St., Kemp St. & Pleasant St.	none	W,H,F,T	perpetuity	8-64-0 8-73-0	E	
Unkety Woods Preserve	Town	CC	62.00	town, state grant	R-1	Woods Court	See ADA appendix	W,H,F,T HR,TM,XC	perpetuity	6-45-0	E	more trails
Upham Conservation Area	Town	CC	4.00	tax title	R-1	thru Sargent Cons.	none	W,H,F	perpetuity	11-61-0	[illegible]	
			539.17									
Gage Town Forest	Town	TFC	37.16	gift (Gage)	R-1	thru Howard's Brook Conservation Area	none	H,T,HR,TM	perpetuity	20-22-0	E	
Pierce Town Forest	Town	TFC	151.00	town	R-1	Groton St	none	H,T,HR,TM	perpetuity	13-103-0	E	
			188.16									
Horse Hill Field	Town	R&P	0.25	cluster - open space	R-1	Hall St	none	[illegible]	perpetuity	14-[illegible]	F	
Larter Field	Town	R&P	20.00	gift (Larter)	R-1	Groton St	See ADA	athletics T, H	perpetuity	16-3-0	F	
Town Fields & Common	Town	R&P	15.88	town, gift	R-1	Main St. extensive parking	See ADA appendix	W, athletics walking	unknown	17-38-0/A-0 17-42-0/38-0	E	
			[illegible]									

Site	Owner	Mgr.	Acres	Funding	Zone	Public Access	Univ. Access	Activ. Uses	Degree of Protection	Assessor Map	Cond	Recreation Potential
Blanchard Hill	Town	Wate	10.85	state open space	R-1	Sky Top Lane	yes	H, T, SV		10-24-13	E	
Hunt Swamp/Beagle Club	Town	Town	6.00	town	R-1	Depot St.	none	W, H		7-55-1	F	
Mixed Use District	Town	Town	22.50	town	Mixed Use	Pleasant St	dirt road	W, H future town use		12-45-1 12-18-0	E	
New Town Wellfield	Town	CR by CC	14.39	town	R-1	thru Sargent Care	none	town water H	perpetuity	12-134-0	E	
Old Town Wellfield and Scales	Town	Town	1.83	town	R-1	Pleasant St	none	W, H	unknown	17-55-0/37-0	E	
River Street Property	Town	Town	38.00 105.37	town	R-1	River St.	driveway	W, H, HR, F future use		1-7-0	E	
Blood Cemetery	Town	Cem	0.344	town	R-1	River & Hollis St	none	cemetery	perpetuity	1-1-0	E	
Central Cemetery	Town	Cem	26.42	town	R-1	Main & Westford St	road within	cemetery	perpetuity	17-11-0/24-0	E	
Meeting House Hill Cemetary	Town	Cem	0.43	town	R-1	Main St.	none	cemetery	perpetuity	22-32-0	[illegible]	
Ridsout Cemetery	Town	Cem	0.54	gift	R-1	Fletcher St	none	cemetery	perpetuity	6-5-0	F	
Swallow Cemetery	Town	Cem	0.555 28.24	gift	R-1	Pleak St	none	cemetery	perpetuity	12-14-0 12-15-0	E	
Nashua River Rail Trail	State	DEM	20.20 1.4 miles from Ayer to State line	DEM	R-1	Hollis St. & River St.	yes-DEM	W, H, F, T XC HR	Article 97	1-23-0	E	
Dunstable Brook Wildlife Area (Lawton)	State	DFW	125.14	DFW	R-1	Lowell St	none	W, H, HUNTING	Article 97	23-3-0	F	
Elbow Meadow Wildlife Area (Flint)	State	DFW	13.83	DFW	R-1	thru Farnsworth Ref.	none	W, H, HUNTING	Article 97	19-5-0 19-8-0	F	
Hack Swamp Wildlife Mgmt Area	State	DFW	55.00	DFW	R-1	Depot Street	none	W, H	Article 97	7-54-0	E	
Kirkpatrick Land	State	DFW	14.97 225.14	DFW	R-1	Hollis St.	yes-Rail Trail	W, H, T	Article 97	1-14-0	E	
			2162.89									

Water=Water Resource
H=Wildlife Habitat

B= Canoe (no motors)
SV= Scenic View

XC=Cross country skiing
HR=Horseback Riding

F=Fishing
T=Trails
M=Timber Management

DRLT=Dunstable Rural Land Trust
CC=Conservation Commission
TFC=Town Forest Committee
R&P=Recreation & Parks
Cem=Cemetery Commission
DEM=
DFW=Div. of Fisheries/Wildlife

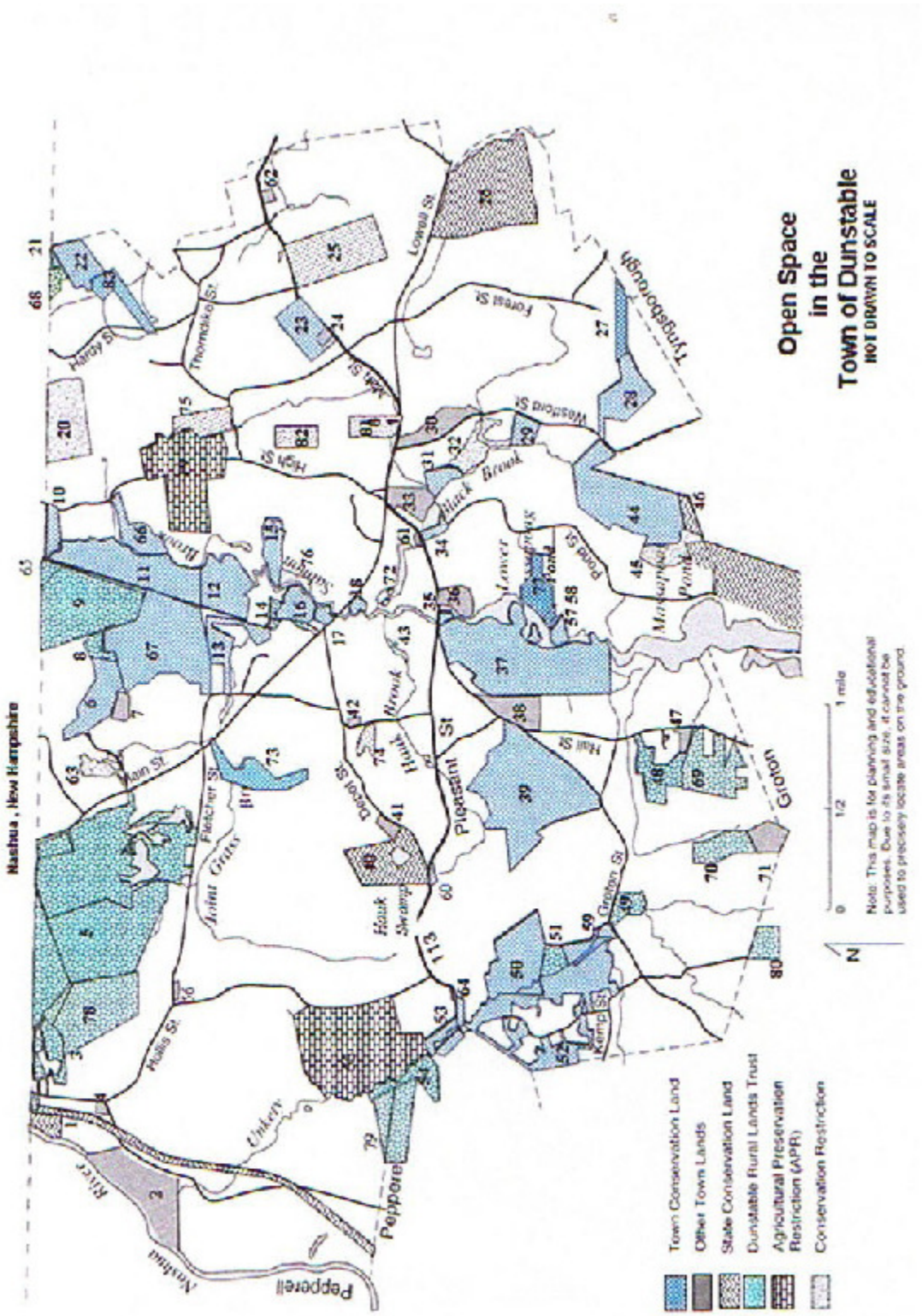
E= All conservation parcels are in excellent condition; none are degraded in any way. Most are wooded (other than [illegible]) several parcels are managed for timber production and wildlife habitat enhancement: the Spaulding Proctor Reservation, the Farnsworth Wildlife Refuge, the Conservation areas known as Flat Rock Hill, Kennedy and Proctor-Gray, and the two Town Forests. Conservation objective management is employed. One parcel, the Amos Kendall Conservation area, includes a two-acre former gravel pit site. Most of the pit area is flat, and it is a former Christmas tree plantation, half is used by horses. It is also an important turtle nesting site.

Conservation Restrictions and Agricultural Preservation Restrictions

Site	Owner	Manager	Acres	Funding	Zoning	Public Access	Universal Access	Activities/Uses	Degree of Protection	Assessor Map
Black Brook CR	private	Con. Com	35.50	gift	R-1	none	none	none	perpetuity	many
Blanchard Hill CR	private	Con. Com	12.00	gift	R-1	none	none	none	perpetuity	many
Davis St./Brook St. CR	private	Con. Com	7.00	gift	R-1	none	none	none	perpetuity	many
DRLT Wildlife Refuge CR	DRLT	Con. Com	162.00	$100	R-1	Main Street	yes		perpetuity	many
Hardman CR	private	DRLT	14.53	gift	R-1	none	none	none	perpetuity	17-156-1
Horsehill Quarry CR	DRLT	Town	30.15	gift	R-1	Hall Street	yes		perpetuity	14-60-0
Kennedy APR	private		40.45		R-1	none	none	none	perpetuity	16-35/36/37-0
Larter APR	private		127.00		R-1	none	none	none	perpetuity	7-97-0
Larter Family Estates CR	private	Civic Trust	75.57		R-1	none	none	none	perpetuity	21-13-0
Mill Brook Open Space CR	DRLT	Con. Com	7.24	gift	R-1	Main Street	yes		perpetuity	11-88-0
Russell Turnpike St. CR	private	Con. Com	17.83	gift	R-1	none	none	none	perpetuity	15-40-1 & 2
Sears CR	private	DRLT	45.00	gift	R-1	none	none	none	perpetuity	15-18-0
Sky Meadow Golf CR	private	Town	49.27		R-1	none	none	none	perpetuity	15-44-0
Staples CR	private	DRLT	10.08	gift	R-1	none	none	none	perpetuity	18-38-0
Staples CR	private	Con. Com	5.00	gift	R-1	none	none	none	perpetuity	15-38-0
Stoddard CR	[illegible]	DRLT	32.01	gift	R-1	none	none	none	perpetuity	11-23-0

LIST OF OPEN SPACE PROPERTIES IN THE TOWN OF DUNSTABLE

		Acres			Acres
1	Nashua River Rail Trail/Kirkpatrick Land	35.17	42	Swallow Cemetery	0.535
2	River Street Town Land	39	43	Randall Open Space	0.16
3	Robbins Farm Open Space	35.93	44	Farnsworth Wildlife Refuge	94.33
4	Blood Cemetery	0.344	45	Staples CR	15.06
5	DRLT Wildlife Preserve	320.75	46	Fitch Wildlife Management Area	12.83
6	Blanchard Hill Conservation Area	39.35	47	Horse Hill Field	6.25
7	Blanchard Hill	10.89	48	Horse Hill Quarry Open Space	38.15
8	Chaney Open Space	9	49	George R. McGovern, Sr. Open Space	14
9	Flat Rock Hill Quarry Open Space	53	50	Unkety Woods Conservation Area	62
10	Stone Arch Bridge Conservation Area	12.24	51	Allgrove Open Space	15
11	Kennedy Conservation Area	50	52	Unkety Brook Conservation Area	88.86
12	Grater & Proctor Lumber Lots Conservation Area	30	53	Gardner Conservation Area	3
13	Joint Grass Brook Conservation Area	21.15	54	Lupien Open Space	6
14	Mill Brook Open Space	7.24	55	Larter Farm APR	127
15	Helen Sawyer Hogg Conservation Area	27	56	Rideout Cemetery	0.608
16	New Town Well Field & [illegible] Conservation Area	18.39	57	Holmes Conservation Area	5
17	Sargent Conservation Area	3	58	Goldthwaite Conservation Area	1.3
18	Sawyer Conservation Area	5	59	Keyes Meadow Conservation Area	10
19	Kennedy APR	53	60	[illegible] Conservation Area	1.7
20	Skyview Golf Course CR	49.27	61	Old Town Well Field and Old Town Scales	1.59
21	Spectacle Hill Open Space	1	62	Tyngsboro/Dunstable Historical Society	6
22	Gage Town Forest	37.19	63	Blanchard Hill CR	13
23	Meeting House Hill Conservation Area	13.45	64	Graves Conservation Area	2.22
24	Meeting House Hill Cemetery	0.43	65	George E. Tully Open Space	3
25	Larter CR	73.52	66	Amos Kendall Conservation Area	26.16
26	Larter Wildlife Management Area	125.14	67	Flat Rock Hill Conservation Area	148
27	Hahesler Forest Conservation Area	117.79	68	Hardy St. Open Space	11.87
28	English Wildlife Refuge	34	69	Woods Open Space	39.95
29	Ritron Conservation Area	10	70	[illegible] Open Space	45
30	Central Cemetery	26.42	71	Groton Land Trust	17.6
31	Bacon Conservation Area	[illegible]	72	Fox Run Parcels Conservation Area	2.14
32	Black Brook CR	25.5	73	Stoddard Conservation Area and CR	32.01
33	Town Common & Fields	15.09	74	Brook St. CR	7
34	Shaw Conservation Area	5	75	Russell CR	17.86
35	Blue Heron/Curtis Conservation Area	7	76	Lawakas CR	10.4
36	Mixed Use District	28.5	77	Fairhurst St. Conservation Area	16.58
37	Spaulding Proctor Reservation	96.44	78	Tully Farm Open Space	65.69
38	Larter Memorial Field	28.3	79	Off River St Open Space	11.5
39	Pierce Town Forest	131	80	Hardman CR	14.33
40	Hank Swamp Wildlife Management Area	55	81	Sears CR	15
41	Bangle Club	5	82	Howard's Brook Conservation Area	10.89
		1626.674			1016.274
				Total Acres in Dunstable	**2642.948**


Open Space
in the
Town of Dunstable
NOT DRAWN TO SCALE
Nashua , New Hampshire
Tyngsborough
Groton
Pepperell
Town Conservation Land
Other Town Lands
State Conservation Land
Dunstable Rural Lands Trust
Agricultural Preservation Restriction (APR)
Conservation Restriction
0
1/2
1 mile
N
Note: This map is for planning and educational purposes. Due to its small size, it cannot be used to precisely locate areas on the ground.

Agricultural Preservation Restriction or Conservation Restriction

Site	Owner	Manager	Acres	Funds Used	Zoning	Public Access	Activities/Uses	Degree of Protection	Book/Page State endorsed
Blanchard Hill Conservation Restriction Sky Top Lane	private	CR held by Cons. Com.	13.00	gift	R-1	none	wildlife habitat, wetland protection	perpetuity	8905/105 10332/227 yes
Kennedy Agricultural Preservation Restriction High Street	private	private	83	state, gift	R-1	none	agriculture	perpetuity	2843/88 yes
Lester Agricultural Preservation Restriction Hollis Street	private	private	127	state, town, gift	R-1	none	agriculture	perpetuity	8400/221 8400/240 yes
Old Winslow Schoolhouse	Tyngsborough-Dunstable Historical Society		6	private	R-1	open at certain times	historic museum	unknown	
Sky Meadow Golf Course High/Hardy Streets	private	CR held by Cons. Com.	40.27	gift	R-1	none	golf	unknown	2603/378 3365/337 yes
Staples Conservation Restriction	private	CR held by Cons. Com.	5	gift	R-1	special permission	hiking, horseback natural, scenic	perpetuity	3853/20 yes
Staples Conservation Restriction	private	CR held by DRLT	10.35	gift	R-1	special permission	wildlife habitat	perpetuity	5752/187 yes
Depot/Brook Street Conservation Restriction	private	CR held by Town	7	gift	R-1	none	agriculture, conservation activities	perpetuity	5535/331 (private, not statutory)
DRLT Wildlife Pres. Main Street Conservation Restriction	DRLT	CR held by Cons. Com.	162.57	gift	R-1	yes	agriculture, maintenance, recreation	perpetuity	3858/75 yes
Black Brook CR Westford Street	private	CR held by Town	25.5	gift	R-1	none	wetland protection wildlife habitat	perpetuity	8441/276 yes
Russell Thornd ke Street	private	CR held by Cons. Com.	17.09	gift	R-1	none	agriculture wetland protection wildlife habitat	perpetuity	11149/263 yes

Site	Owner	Manager	Acres	Funds Used	Zoning	Public Access	Activities/Uses	Degree of Protection	Book/Page State endorsed
Hardman Conservation Restriction Main St.	private	CR held by DRLT	14.03	gift	R-1	none	wildlife habitat wetland protection, agriculture	perpetuity	23640/7 yes
Horse Hill Quarry Conservation Restriction Hall Street	DRLT	CR held by Town	38.15	gift	R-1	none	nature, scenic	perpetuity	7844/30 (private, not statutory)
Mill Brook Estates CR	private	CR held by Town	7.342	gift	R-1	none	nature, scenic agriculture	perpetuity	7580/100 (private, not statutory)
Carter Family Estate CR Route 113 - Main Street	private	CR held by Dunstable Civic Trust	75.3187	gift	R-1	yes	agriculture forestry	perpetuity	17610/109 yes
Sears CR High Street	private	CR held by DRLT	15	gift	R-1	none	nature, scenic, agriculture	perpetuity	23654/154 yes
Stoddard CR Main Street	CC	CR held by DRLT	52.01	gift	R-1	none	conservation purposes recreational	perpetuity	20818/23 yes
		Total	685.01						

PRIVATE LANDS: FOREST: CHAPTER 61

Degree of Site	Ownership	Acreage	Assessor No.	Protection
Joseph 61	Joseph Douglas M/Sandra L. Helve	50.00	10-25-0	temporary
Lanue 61	Lanue Naomi K. Trustee/N.K Lanue	25.00 2.00	14-2-0 14-2-1	temporary temporary
Lingerman 61	Lingerman Susan L/Suzanne L	11.00	14-9-0	temporary
Kennedy 61	Kennedy Robert/Claire	5.00 48.29	15-2-0 15-3-0	temporary
Kennedy 61	Kennedy Robert	18.00 22.00	16-38-0 22.50 C	temporary temporary
Desilets 61	Desilets Gerard & Hilda	5.00	15-39-0	temporary
Desilets 61	Desilets Kenneth G. Trustee/Family	75.00	15-42-0	temporary
Emery 61	Emery Thomas & Patricia	41.30	17-120-0	temporary
Staples 61	Staples Joanne B	61.00	18-33-0	temporary
Charney 61	Charney Lauren M.	32.00 3.00 45.87	18-7-0 18-8-0 23.85 0	temporary temporary temporary
Flanagan 61	Flanagan Thomas J. Jr/Kimberly M.	11.31	19-1-0	temporary
Greene 61	Greene James A III/Doris F	45.00	19-2-0	temporary
Lanier 61	Lanier Judith K.	46.70	21-16-0	temporary
Cover 61	Cover Frank	16.00	21-3-0	temporary
Cover Realty 61	Cover Realty Trust	57.00	21-4 0	temporary
George 61	George Charles S. 2004 Rev. Tr. Dorothy George 2004 Rev. Tr.	41.84	22-48-1	temporary
Bertrand/Wright 61	Bertrand Christopher & Joyce Albert & Judith Wright	37.00	23-4-0	temporary
Barfelle 61	Barfelle James & Nicholas & Althea	1.00	3-3-0	temporary
Tully 61	Tully George E. Jr	20.00	5-7-0	temporary
Goss 61	Goss Wesley & Jodi	56.05	7 3 0	temporary

61

PRIVATE LANDS: FOREST: CHAPTER 61

Degree of Site	Ownership	Acreage	Assessor No.	Protection
George 61	George Karen Trustee Dorothy George GST Taxable	16.50	5-4-0	temporary
Georgoulis 61	Georgoulis Nicholas, Christos c/o Barbara M. Georgoulis	46.00	8-32-0	temporary
		884.76		

PRIVATE LANDS: AGRICULTURE: CHAPTER 61A

Degree of Site	Ownership	Acreage	Assessor No.	Protection
McGovern 61A	McGovern George Jr. & Hugh H&G Realty	75.00 85.00	1-2-0 21-17-0	temporary
McGovern 61A	McGovern George R/Lee A	21.57 29.64	16-65-0 17-138-0	temporary
McGovern 61A	McGovern George Jr.	6.00	17-123-0	temporary
McGovern 61A	McGovern George R	0.43	17-124-0	temporary
McGovern 61A	McGovern George & Susan	13.00	17-127-0	temporary
McGovern 61A	McGovern Hugh E/George R. McGovern Jr. Trustees	1.11	17-139-0	temporary
McGovern 61A	H&G Realty Trust c/o Hugh McGovern	7.00 120.00 7.00	21-18-0 8-3-0 9-1-1	temporary temporary temporary
McGovern 61A	McGovern Hugh E & George R H&G Realty Trust	24.49	21-22-0	temporary
McGovern 61A	McGovern George Jr./EKM Realty	20.00	21-3-0	temporary
McGovern 61A	McGovern Hugh	41.00 6.00	9-10-0 9-13-0	temporary
McGovern 61A	George Jr. & Hugh	7.00	9-11-0	temporary
McGovern 61A	McGovern Hugh/EKM Realty	15.00 70.00	9-12-0 9-9-0	temporary temporary
McGovern 61A	McGovern Hugh & Rosena	32.00 2.42	9-22-0 9-8-0	temporary temporary
Tully 61A	Tully June E. Marital Grip Trust George E. Tully Sr. Trustee	21.00 23.00 100.00 13.00 17.50 67.00 22.55 38.00 15.00 10.00 58.00 82.00 13.00	1-20-0 1-21-0 1-4-0 11-188-0 11-180-0 12-103-0 12-105-0 5-1-0 8-2-0 8-25-0 8-4-0 7-66-0 9-19-0	temporary temporary temporary temporary temporary temporary temporary temporary temporary temporary temporary temporary temporary

83

Degree of Site	Ownership	Acreage	Assessor No.	Protection
	Rull: .. Tully Rev. Trust	12.34	11-69-0	temporary
Tully 61A	Tully Farms Inc	202.00	6-9-0	temporary
Tully 61A	Sweet Ernest G./ Sweet Ernest C .r	15.00	12-10-0	temporary
Frye/Lentz 61A	Frye Robert/Lentz Susan	12.00	12-83-0	temporary
Frye 61A	Frye Robert	3.03	12-87-0	temporary
Barnes 61A	Barnes Dana	5.54	12-88-0	temporary
James 61A	Barnes Dana/Barnes Mary Jane	1.00	12-89-0	temporary
Melancon 61A	Melancon Raymond & Agnes Trustees 473 High St. Rity Tr	8.19	15-24-0	temporary
Bridge 61A	Bridge William M/Mary M. Hoffcman	12.40	15-26-0	temporary
Kennedy 61A	Kennedy Daniel R	8.50	15-38-0	temporary
Kennedy 61A	Kennedy Robert	7.20 51.00	15-39-0 16-36-0	temporary
Henry 61A	Kathleen Henry	11.47	15-9-0	temporary
Psaltodakis 61A	Psaltodakis Susan	7.23	16-37-0	temporary
Russell 61A	Russell Rosemarie	10.58	16-40-1	temporary
Russell 61A	Russell Rosemarie/James A.	13.26	16-40-2	temporary
Hardiman 61A	Hardiman David R. Trustee David R. Hardiman Trust	14.33	17-135-0	temporary
Fenochetti 61A	Fenochetti Anne M	5.06	17-50-0	temporary
Chaney 61A	Chaney Alan E /Chaney Eugene S	16.00	17-51-0	temporary
Chaney 61A	Chaney Alan E	0.75 5.00	18-4-0 18-6A-0	temporary temporary
Simmons 61A	Simmons James W/Frances M	8.90	17-8-0	temporary
Paterauda 61A	Paterauda Ronald & Ann	71.00	2-1-0	temporary
McLoon 61A	McLoon Alan P	17.00	21-1-0	temporary
McLoon 61A	McLoon Olive	97.00	21-21-0	temporary

Degree of Site	Ownership	Acreage	Assessor No.	Protection
Tyson 61A	Tyson Charlotte/Allan M. Hunter	12.00	22-62-0	temporary
White 61A	White Gerald/Susan Anne	19.76	23-13-0	temporary
Bertrand 61A	Bertrand Christopher & Joyce	6.79	28-36-0	temporary
Whelan 61A	Whelan David M./Denise M.	7.00	28-43-0	temporary
Treinis 61A	Treinis Andrew & Julie	21.00	6-22-0	temporary
Lanier 61A	Lanier Judith K Eads Trustee L Lanier Trust & S. Lingiman	2.00 127.00 17.96	7-36-0 7-37-0 7-44-0	temporary temporary temporary
Peterson 61A	Peterson Robert F./Cheryl A.	2.05 35.10	6-33-0 6-37-0	temporary temporary
Woods 61A	Woods David S	30.00	8-38-0	temporary
Flowers 61A	Carl Flowers Jr. Trust	20.00 5.00 2.00	9-17-0 9-20-0 9-21-0	temporary temporary temporary
Woods 61A	Woods David S	9.00	9-38-0	temporary
Palumbo 61A	Palumbo Michael F./Denise	30.00	9-44-0	temporary
Staples 61A	Staples	7.00	18-36-0	temporary
Tully 61A	Tully Farms	16.50	8-21-0	temporary
		2222.06		

PRIVATE LANDS: Recreation 61B

Degree of Site	Ownership	Acreage	Assessor No.	Protection
Carine Realty 61B	Beaganes G J & K Connelle	6.39 2.18 2.06	16 63-0 21-23-2 21-23-3	temporary temporary temporary
Costello 61B	Costello Thomas	7.00	19-1-2	temporary
Bertrand Wright 61B	Bertrand Christopher & Joyce Albert & Judith Wright	8.00	23-1-0	temporary
Oglesain Farm 61B	Oglesain Farm LLC	6.63	5-12-0	temporary
Hermansen 61B	Hermansen Marcus C	6.05	5 13-0	temporary
George 61B/61	George Karen Trustee/Dorothy	6.50	8-7-0	temporary
		43.61		

SUMMARY of PERMANENT AND NON PERMANENT PROTECTED LANDS

6,178.25 acres inventoried: 2,762.99 acres permanently protect,
3,415.26 acres not permanently protected

Town Conservation Commission --- 884.07 acres in 31 parcels, acquired as follows:

467 acres in 13 parcels acquired by gifts
107.88 acres in 10 parcels acquired by town funds
87.16 in 2 parcels acquired by town funds and state grant (Self-Help)
148 acres in 1 parcel acquired by town, CPA and state grant (Self-Help)
10.89 acres in 1 parcel acquired by CPA and private funding
34 acres in 2 parcels acquired by tax title
29.14 acres in 2 parcels acquired by town funds and gifts

Town Recreation --- 48.43 acres in 3 parcels

Other Town Lands (forests, cemeteries, well fields) --- 285.90 acres in 12 parcels

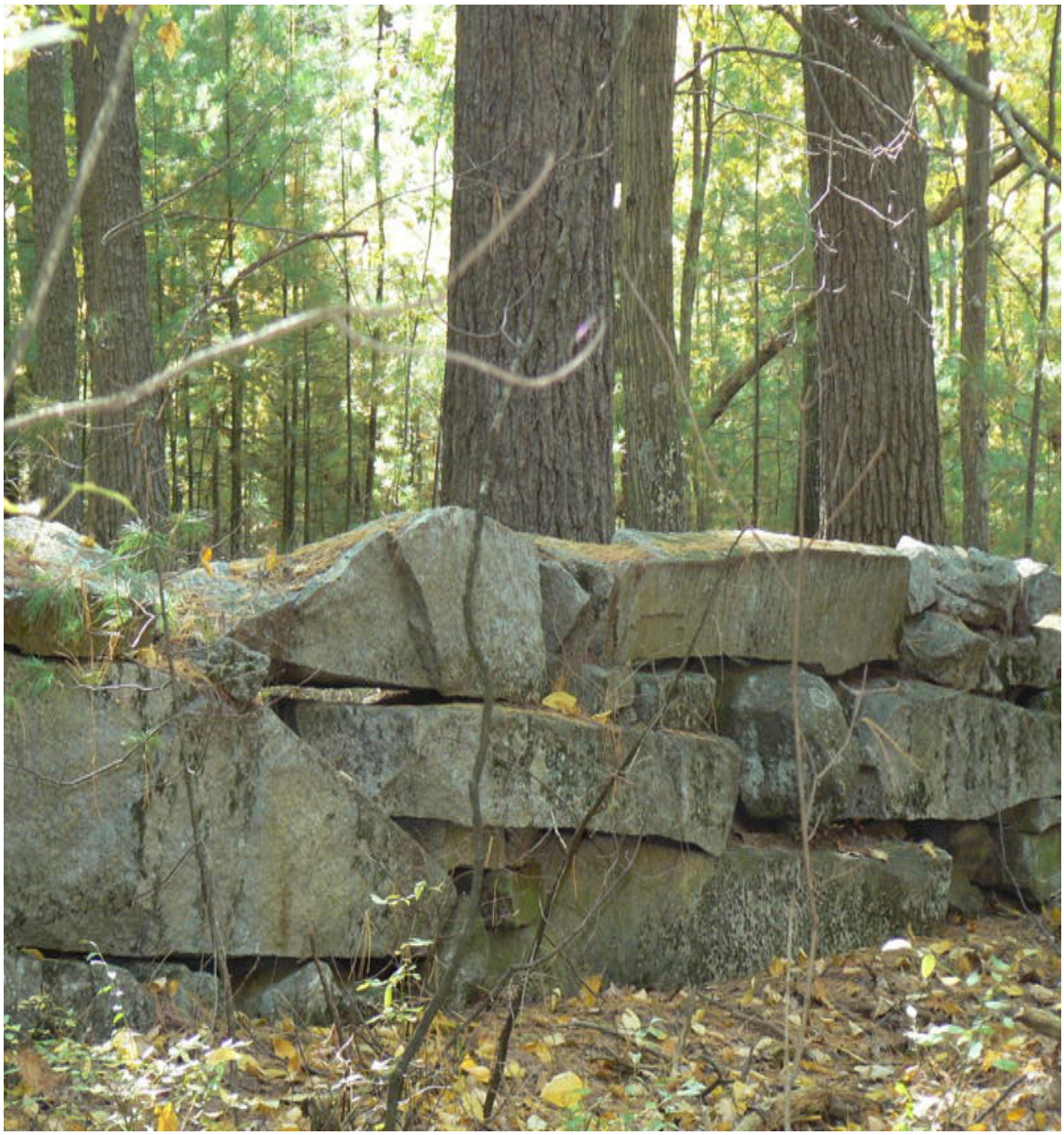
Dunstable Rural Land Trust --- 700.07 acres in 17 parcels

Mass. Division of Fisheries and Wildlife --- 207.94 acres in 4 parcels

Mass Dept. of Environmental Management Nashua Valley Railroad Trail --- 20.20 acres

Chapter Lands: 3,346.63 acres
APR & CR Lands: 685.01

Section 6
Community Goals



SECTION 6 – COMMUNITY GOALS

Description of Process

The Conservation Commission began the updating of the 2010 Open Space and Recreation Plan starting in January of 2010. Previous Open Space and Recreation plans were used as guides. Public meetings were held and data was gathered by Commission members and the Conservation Commission Secretary. The Parks and Recreation Commissions coordinated their goals with the Commission and the Dunstable Board of Health added information.

The Conservation Commission as a whole worked as the Open Space Planning Committee, hosting public meetings to discuss community open space and recreation needs, and to set goals and objectives and recommendations for the five-year action plan. Meetings on which discussions took place were held on: January 11th, February 8th, February 22nd, March 8th, April 26th, June 14th, August 9th, September 27th and October 13th

A public survey was sent to every residence in Dunstable. Residents were told to bring the completed survey to the Annual Town Meeting or drop it off (or mail it) to the Town Hall. A reminder was put in the local "Neighbor to Neighbor" paper a few weeks after the survey was sent out.

The original 1976 Open Space and Recreation Master Plan, the 1998 and 2005 updates together form the basis for this latest 2010 update. Its goals are still worth striving for and its environmental analysis remains an excellent description of Dunstable's natural resources. Indeed, the philosophy of recreation described in the 1976 Plan continues to be relevant today.

Statement of Open Space and Recreation Goals

Protecting Dunstable's natural resources and preserving its rural character are the two primary conservation goals of this plan update. An ideal open space system that would achieve these goals would include complete Greenways along Dunstable's major streams, with enlarged conservation lands that are linked into a comprehensive open space network that protects Dunstable's outstanding scenic places and natural resources.

Integral to the achievement of these goals is to increase public awareness of the benefits of conservation, so that there is a common understanding of how investment in land conservation pays dividends in the long run by reducing public service expenditures and enhancing the quality of life.

The primary recreation goals are to provide adequate fields for athletic and other outdoor recreational uses, to provide for a public swimming area, to assure access to the town's water bodies for fishing and boating, and to protect and improve the town's system of trails for foot travel, bicyclers, and horseback riders.

This plan is intended to serve as a guide to help Dunstable's people take steps to achieve these goals through the recommended actions set forth here.

Section 7
Analysis of Needs

SECTION 7 – ANALYSIS OF NEEDS

How close is Dunstable to achieving its conservation goals? All still appears well at present, the rural beauty of the town's landscape and the integrity of its natural resources are largely unspoiled. Conservation efforts have made steady progress over the past two decades, however although the economy has temporarily slowed development, that can change in the near future.

Serious efforts need to be sustained, if the desired conservation network is to be protected before opportunities are lost through continual land development. At some point, an ideal piece of land for conservation may be proposed for development instead. Would the town be prepared to act?

Open Space Pays

If a parcel of open space land comes up for sale, would it make more financial sense for the town to buy it or to let it be sold for development? This is a very real question that the town of Dunstable has had to face and will continue to do so in the future. By law towns have a 120-day option to buy land classified under Chapter 61, 61A, and 61B if that land is proposed for conversion to development. Would it be financially prudent for Dunstable to exercise this option?

The answer is yes, proven in the accompanying Open Space Pays example, using figures from Dunstable's fiscal year 1996. If a 100-acre parcel classified under Chapter 61 were purchased by the town instead of being developed into 40 house lots, the average homeowner would save more than $82 dollars on their annual tax bill. This is the difference between the cost of acquiring the land ($29.23 increase to the average tax bill) and the cost of servicing 40 more houses ($111.44 increase to the average tax bill). Even if the land were not under Chapter 61, but assessed at full market value, which means a larger reduction in the tax base, the annual savings on the average homeowner's tax bill would still be nearly $75!

However, no small town can afford to buy all its open land. And there is a legitimate need for housing. The ideal would be that as land changes hands gradually over time, it would be only minimally developed so that the proportion of buildings to open space remains relatively stable. But the market militates against this outcome. The continuation of development to the density allowed by zoning is likely to be inevitable. As a town that wishes to be primarily residential, Dunstable is programmed to experience continual increases in tax costs because residential growth seldom pays for itself. The Open Space Pays analysis shows one way to reduce these cost increases is to acquire land for open space -- laying to rest the still common misconception that land conservation is more costly to a town than growth!

In the 2010 Open Space Survey, more than 80% of respondents felt that protecting and enhancing lands surrounding water supplies, wells, aquifers, rivers, ponds, and streams is

the most important for the town. Residents also feel strongly about protecting our agricultural/farm land. Priorities need to be set so that land acquisition funds are targeted to those parcels with the most influence on Dunstable's rural landscape and wetlands.

The Open Space and Recreational Survey showed that the majority of residents that responded have lived in town over 21 years and use conservation property weekly or at least a few times a year. Walking, cross country skiing, biking, dog walking, snow shoeing, bird watching, horseback riding, and fishing are all activities that are found on conservation properties. Residents indicated that one thing they would like to see are trail maps of our properties.

How much of Dunstable should be conserved? Many areas are conservation priorities -- Greenways along the Nashua River and Salmon, Unkety, and Black Brooks; the Gateway to Dunstable along Route 113 east of the town center; hilltops, wildlife habitat, historic places, and farmland. If a 300-foot wide Greenway is completed along the brooks and Route 113, this could add up to 997 acres, based on approximate measurements from the GIS Open Space map. In many areas, a wider Greenway would be needed to include wetlands, their buffers and aquifer recharge areas, especially around the town wellfield. Larger blocks of acreage may need to be conserved to protect fields, wildlife habitats, and the views of hilltops.

However, a 300-foot-wide Greenway along each side of the streams and road is used as a figure that would give significant, if not always sufficient, protection to the resources. The table charts estimated areas and costs for each Greenway.

Greenway	**Estimated Acres**
Route 113 Gateway	130
Salmon Brook	175
Unkety Brook	414
Black Brook	87
Nashua River	191

Summary of Resource Protection Needs

The Salmon Brook Greenway in Dunstable is about half complete, with at least 5 miles of stream bank in conservation land. A strong foundation has been laid for the Unkety Brook Greenway and along Black Brook. However, much of Dunstable's Natural Heritage sites remain unprotected, as do some of the town's outstanding hilltops and the Route 113 Gateway to Dunstable scenic corridor.

Linkages for wildlife corridors need to be made between existing conservation lands. Some important linkages would connect between the Pierce Town Forest and the Spaulding Proctor Reservation, and connect the Farnsworth Wildlife Refuge and Massachusetts Fitch Wildlife Management Area in the Dunstable/Tyngsborough border area with Massapoag and Lower Massapoag Ponds. Salmon Brook's wildlife corridor is well protected along much of the western bank, but long stretches of unconserved land

remain along the eastern bank. Dunstable's stretch of the Nashua River, another important wildlife corridor, has very little conservation land.

Dunstable has two significant aquifers along Salmon Brook and Unkety Brook. The town's two-acre residential zoning would serve to minimize potential contamination to the aquifers, but local zoning allows for use variances, which could conceivably introduce threats to water quality depending on the types of uses that may be granted. An aquifer protection bylaw recently passed gives guidance to the Planning Board to prevent potentially contaminating uses.

As befits a rural community where agriculture is still active, Dunstable has sizable areas of prime farmland soils. The state has protected parts of these areas through purchasing Agricultural Preservation Restrictions on two local farms, with some town funds and landowner contributions. Many prime farmland soil areas are found on lands classified under Chapter 61A, which indicates that landowners plan to continue farming. The temporary protection for farmland afforded by Chapter 61A can become permanent if the town or a conservation group can exercise the Chapter 61A 120-day option to buy the land if it is proposed to be converted for development. Many areas of prime farmland soils lack even the temporary protection of Chapter 61A.

How can it be determined which parcels of land would be priorities for land acquisition? The proposed Conservation Matrix in the Appendix sets out possible criteria. The best way to set priorities would be to involve all town boards and commissions, seeking input from them and from private conservation groups such as the Dunstable Rural Land Trust, and private recreation groups such as sports clubs.

As land development continues, Dunstable's extensive network of wetlands is becoming encroached upon through building in the wetlands buffers. Building too close to a wetland is a detriment both to the wetland and to the homeowner whose yard becomes flooded when nature takes its course. The Conservation Commission's first attempt to correct this situation was voted down at 1996 Town Meeting due to misunderstanding about the scope of the regulation. Since then, the Wetland Bylaw was amend by Town Meeting to include a No New Permanent Structure within 60’ of a wetland.

Summary of the Community's Needs

A Philosophy of Recreation for Dunstable (from the 1976 Open Space and Recreation Master Plan): Recreation, as it is defined traditionally, developed out of the need to provide urban populations with a substitute for natural activity. It was conceived as a means to provide fresh air, exercise, or relaxation in a pleasant environment. Its social function was to provide a change from monotonous work and also to promote the competitive spirit so honored by the Industrial Revolution. Because of the lack of open space in urban areas, recreation has also developed as a very intensive use activity.

Dunstable, however, presents a sharp contrast to this. Rather than being a patch of nature in the midst of development, it is a patch of development in the middle of nature. Because

of this, recreational activity need not be defined in the narrow traditional sense. The aim of recreation in any community is to assist in the development of the whole person and in particular to fill in the social gaps that are missing from everyday economic activity. For adults this means providing diversion (activity or relaxation) from work and for children providing opportunities for physical development and socialization.

Recreation should provide opportunities for competitive activity, as in its traditional role. But it also should be seen as a means to assist in the social development of young people, and, especially in Dunstable's case, to be a means of environmental enjoyment and conservation. Dunstable now supports activity which fits all three categories; therefore recreational planning can build on those activities and organizations which already exist.

Recreation as Organized Competitive Activity: This aspect of recreation includes those competitive team sports which are most familiar: baseball, basketball, football, hockey, tennis, etc. Facilities required are fields and courts and are among the more expensive public recreational facilities to build and maintain.

Recreation as Cooperative Social Activity: This is an area which is not generally considered part of traditional recreation. Even in competitive sports, an underlying theme of recreational activity is the encouragement of the spirit of cooperation in group activity. Unfortunately, this purpose is often subordinated in the competitive pursuit of winning.

From the perspective of the development needs of children, however, this aspect of recreation is very important indeed. In a society of highly specialized economic activity, children have little opportunity to play a constructive role, and instead are set aside into that limbo called "childhood". Integrating children into modern specialized economic activity is almost impossible, but recreational activity can provide opportunities for young people to be "a small partner in a big world," and therefore make a valuable contribution to the development needs of children and adults.

Recreation of this nature covers a wide range of activities and includes a great variety of organizations, for example the Recreation Commission, scouts, 4-H, church and school groups. Roadside litter cleanup is an example of cooperative and socially useful activity among children/adults. For the past few years, the town runs a clean up weekend where residents bag road side trash that the Highway Dept. picks up and takes to the dump.

Recreation as Enjoyment of the Natural Environment: One of Dunstable's most valuable assets is its landscape environment. A primary goal of recreation should be to make it easier for people to enjoy that environment both by observing it at close hand and by providing opportunities to understand the natural world as an interrelated living system (ecosystem). In this way recreation is not only enjoyable but serves the purpose of advancing environmental awareness and fostering a deeper appreciation of the value of conservation efforts.

This aspect of recreation has also been found to be the most popular. Perhaps the most thorough study of adult outdoor recreational demand is "Outdoor Recreation for

America," prepared by the Outdoor Recreation Resource Review Commission in 1968. The study disclosed that the most popular and most frequently engaged in activities were the "simple activities," those which require the least preparation or specialized equipment. This was true regardless of age, income, education, or occupation.

Here is where the aims of recreation and environmental protection come together, for the provision of facilities for popular simple activities such as walking and bicycling implies protection of open space and the community's visual quality. Recreation and Environmental Protection: Dunstable offers a substantial opportunity to integrate recreational activity and environmental appreciation and protection. Wetlands protection, for instance can serve as a means of providing an open space system throughout the town, with recreational trails sited along the upland edge of the wetland. This not only provides another reason for preserving wetland areas themselves, but also justifies the acquisition of adjoining upland areas. This both preserves the ecotonal edge for wildlife and sites trails where vegetative and wildlife diversity will be greatest.

One of the most effective methods of fostering appreciation for the environment is by helping people to see why the environment is valuable. Interpretive trails serve this educational function while also providing a recreational resource and a reason to enjoy the out-of-doors. An interpretive trail should be located at a site where a sufficient variety of natural characteristics exist together, so that the length of the trail need not be too long. If possible, the trail should also show the effects that humans have had on the environment, and how nature adapts to this intrusion. An interpretive trail in a community like Dunstable also can serve as an historical trail, by showing how the land was used early settlers, farmers, and artisans. By comparing how former generations used the land and how we use land today, a lesson can be learned on how today's technology and land use practices have a greater potential for long-term environmental damage.

Ideally, an interpretive trail should be located where it can be easily accessible for use by the schools. At the trail entrance, interpretive text and maps should be available for trail users, either as an exhibit or through pamphlets in a dispenser.

Environmental recreation also allows a greater age integration, with children sharing on an equal footing with adults. It also provides opportunities for socially useful work by young people in preserving the environment, including trail clearing and marking, planting vegetation, constructing necessary facilities and simple maintenance chores. In this way valuable work is performed in the context of play, while advancing environmental protection and the social development of young people. It is certainly a happy coincidence when play and work can be so well integrated.

Today's Community Recreational Needs:

The survey sent to all Dunstable households as part of the 2010 Open Space and Recreation Plan showed preferences for simple recreational activities. Many residents walk and/or bike as their main recreational activity. The survey also showed that organized athletics/activities are very important to those with young families. Two facilities that residents would like to see in town are public access for swimming/boating and an outdoor ice skating rink.

Needs of Handicap
When the Town Hall was renovated and the Library built in the mid 1990's, handicap access to municipal buildings was improved. The addition of Larter Field enables handicap residents to watch a baseball/soccer game and easy access to a paved path. All open space purchased with state self-help funds is accessible to the handicap. Recently, the Town formed a "Safe Pathways" committee that is looking into a future sidewalk running through the center of town so that our handicap can get from one municipal building to another.

Elderly
The elderly use the Town Hall and Library for their weekly meetings. The Town does lack affordable housing for our elderly/young families, however, we do have an Affordable Housing Committee looking into building on the Town's MUD District.

Athletic Fields:
With the completion of Larter Field along with the Towns Fields, the need for more athletic fields should be satisfied for the intermediate term. The Horse Hill Field is still an area of potential recreational use.

Swimming Area:
Massapoag Pond offers the best swimming waters in Dunstable. In the past, the town had used a beach on the Tyngsborough shore, but when this land was up for sale, the town of Tyngsborough would not permit the town of Dunstable to buy it. Now the town has no access to Massapoag Pond for swimming.

The most attainable route for the town to gain some access for swimming in Massapoag may be to approach the Lowell YMCA and work out a possible lease arrangement to allow townspeople to have access to the Y beach during off hours when the camp is less busy. The Y beach is one of the best on the pond. Many residents send their children to the Y camp.

Fishing and Boating:
The need for more water access for fishing and boating can be accommodated as Greenways grow along the town's major streams. Massapoag Pond, Salmon Brook and Unkety Brook are the main fishing areas in Dunstable and are stocked each year by the Massachusetts Division of Fisheries and Wildlife. Access along the brooks is available on the several conservation sites owned by the town and the Dunstable Rural Land Trust. In addition to stocking the streams, the only facility necessary for improving conditions for fishing on these streams is provision of off-street parking. Winter ice fishing is popular on lower Massapoag Pond as well as the ponds within the DRLT Wildlife Refuge.

Salmon Brook is navigable throughout its length in Dunstable by canoe or small boat. It is navigable throughout the year, except during winter ice periods. It is an especially appealing waterway for boating, with its meandering course, shoreline variety of marsh and woodland, and untouched natural surroundings. There is a good canoe launch site for

Salmon Brook at Main Street, but it lies on private land. The take-out for this stretch lies on Ridge Road in Nashua, NH and its status is unclear.

Dunstable's other navigable stream is the Nashua River. There is now boat access/canoe launch to the Nashua River through the Fitzpatrick Fisheries and Wildlife parcel. It is also directly connected to the Rail Trail.

Now that the Nashua River runs much cleaner, it has possibilities for fishing, although eating the fish is not advisable due to the risk of heavy metals such as lead, mercury, or chromium that may be found in their flesh. Indeed, all freshwater fish appear to have elevated levels of mercury in their flesh, even in pristine areas. The cause is uncertain; it may be airborne pollution from urban areas or incinerators. At any rate, the Dunstable stretch of the Nashua River, although unstocked, may have potential for trout from stocks that have traveled down the Nissitissit. It also has potential for shad, migrating upstream through the fish passages from stocks in the Merrimack River.

Massapoag Pond is the most heavily used recreational water body in Dunstable, but the town has no public access to this pond. There are now no limitations on motor horsepower or speed for boats on Massapoag Pond, other than the state's overall water speed limit of 45 mph. A boating fatality occurred on Massapoag many years ago. The safety of Pond users could benefit from a slower speed limit for motor boats, since it is a rather narrow water body.

Since the shoreline of Massapoag extends into Tyngsborough and Groton, as well as Dunstable, coordination between these three towns would be needed to develop and enforce a boating ordinance for reduced speed limits. State law allows towns to make their own boating regulations for shared water bodies.

Trails:
Many Greenway areas, such as the Spaulding Proctor Reservation, include trail systems, but many of these trails could benefit from improvements such as bridges, marking, and clearing of brush. Dunstable now has an informal bridle path network, on public and private land, but with the greater part on private land. Many of the trails are old logging roads. Riders contact private land owners for permission to use their land. As development occurs, some of these trails may be lost unless provisions are made to preserve them through trail easements in cluster development open spaces.

The Nashua Valley Rail Trail bicycle path located on the old Ayer to Hollis Depot line belongs to the Department of Environmental Management. Stretching 11.3 miles from Ayer to the state line in Dunstable, it follows the Nashua Valley and includes 2 miles near the western border of Dunstable. It is for non-motorized recreation: bicycles, horses, foot travel. It is handicapped accessible throughout its length.

Hiking trails on River St., connecting the Rail Trail to the Robbins Farm parcel and DRLT Wildlife Refuge have also been created by several Eagle Scout candidates of the Boy Scout Troop 28.

Another possible bicycle path could be readily created along the stretch of Route 113 between Pepperell and the town center. This stretch has been widened, and there would be room for a bike lane if the state Highway Department would mark it off on the existing pavement. This portion of Route 113 is a popular cycling route and could make a loop ride connecting with the developed Nashua Valley Rail Trail.

The old Red Line Railroad right-of-way that runs north to Nashua along the west side of Salmon Brook's valley is enjoyed by many trail users. It borders the Spaulding Proctor Reservation and other conservation lands along Salmon Brook. Most of this line is now in private hands, and some of its continuity has been lost. It would be good to assure continuing public use of this Rail Trail by working out trail easements or possible transfer of title from landowners.

There is some concern that as snowmobiling and ATVs are becoming popular again, they may disturb non-motorized trail users with their swift and noisy machines. ATVs can pose a threat to water quality through their tendency to erode trail surfaces. Motorized trail siting presents special problems because of the danger inherent to other users of the trail and because of vehicle noise. A separate trail system is almost a necessity.

Since motorized sports extend regionally, the optimum trail system should connect regionally. For safety, it should be clearly identified as a motorized trail. Power line easements would meet the criteria of regional interconnection and identifiability. Permission would be needed not only from the power companies but also from the owners of the land crossed by the easements. There are about ten miles of easements in Dunstable. Power easements, because of their relative isolation, also have the advantage of keeping motor noise from residential areas.

Motorized trail planning presents special problems, for often the needs of the sport and the rights of affected residents cannot be readily reconciled. Users of these sport machines should be involved in trails planning, to help increase their awareness of the importance of conservation and the concerns of abutters.

Management Needs, Potential Change of Use

Most of the Recreation Commission's programs are centered on organized sports for school-age children. The Dunstable Youth Athletic Association runs a farm league, a little league, a pony league, and youth basketball. Joint Groton-Dunstable clubs associated with the regional school district handle basketball, soccer, and hockey. For adults, there is men's basketball, some volleyball, and some ad hoc co-ed softball.

Management of both conservation lands and recreation programs could benefit from broader participation by townspeople. Some good recommendations to encourage this were made at the Community Meetings: create a list of projects for volunteers to do for conservation/recreation land management, organize Community Stewardship groups to care for lands in their neighborhoods, and form an Open Space and Recreation Welcoming Committee to meet with new homeowners and encourage them to participate.

Dunstable's recreation programs are run entirely by volunteers and it is unlikely that the town would hire a full-time recreation director because its population is small. However, since Dunstable and Groton share in the same school district, it may be possible to share in a summer-time recreational program where both towns would contribute to the costs of a fulltime director.

Two different town commissions are involved with recreational lands: the Recreation Commission oversees programs that use the facilities, and the Parks Commission does the maintenance. Combining these Commissions could lead to more efficient management, because use and maintenance are often closely connected. Communications between the Conservation and Recreation Commissions could be strengthened when these two groups get together to design the list of projects for volunteers to participate in land management.

The threats to Dunstable's natural areas from potential changes of use through development are somewhat abated by the cluster Open Space Residential Development ordinance. This gives a chance to site development away from sensitive areas if people are aware of these areas. Here is where a good system of communication among boards and commissions can be most valuable. A good example occurred where cluster open space was saved for recreational use, thanks to timely input from concerned groups.

One sensitive pristine area is the Salmon Brook valley from Main Street to the state line. This stretch (2 miles as the crow flies but not as the brook winds) is not now threatened but would be very vulnerable to future disturbance due to its openness and topography. Floating down Salmon Brook is like traveling through a "Great Hall" of nature, where the grand avenue of forested terraces rises up on either side of the rushing brook's luxuriant broad green meadows. Choirs of birds and frogs serenade springtime voyagers. A traditional 300-foot-wide Greenway would not be sufficient to preserve this unusually open undeveloped corridor. The crests of the terraces also need protection to keep this natural cathedral intact, so the chorale of birds and frogs can remain clear, unaccompanied by the growl of motors and other discordant sounds of daily human existence. Russell Cohen, Rivers Advocate with the Massachusetts Riverways Program of the Division of Fisheries and Wildlife, visited this stretch of Salmon Brook and found that it "is one of the most pristine and unspoiled stream corridors in eastern Massachusetts... something very special, a river corridor in close to primeval condition."

The Dunstable Conservation Commission has worked with local landowners to conserve more than half of this stretch of Salmon Brook.

Statewide Comprehensive Outdoor Recreation Plan (SCORP)

What is SCORP? SCORP stands for the Statewide Comprehensive Outdoor Recreation Plan - Massachusetts 2006, which is a 5 year plan developed by individual states for use in planning for future needs and for eligibility of grants.

Activities Demand in Dunstable (the Northeastern Region)

Recreational Activities

According to the SCORP; swimming, walking (hiking), sightseeing, and fishing top the list for recreational activities in the Northeast region. Dunstable follows this statewide pattern. With Lake Massapoag, Salmon Brook and many ponds located throughout our town, many of our residents enjoy fishing. Swimming can be done at the YMAC camp or by residents along the lake. With Dunstable's vast open space and the construction of the Rail Trail (which passes through Dunstable), walking and biking are also very popular activities. Many residents also use Larter Field's track as a way to get exercise.

The Statewide Comprehensive Outdoor Recreation Plan noted that recreational exceptions that some areas in the Northeast region enjoy are: baseball, sunbathing, horseback riding, off-road vehicle driving, snowmobiling, boating and surfing as well as soccer and pond hockey. With the exception of surfing, Dunstable's residents also enjoy all of those activities. Many residents own horses in Dunstable and enjoy our open space and trails for riding. Local farms with vast amounts of land allow off-road vehicles and snowmobiling on their land. With the many ponds in town, pond hockey and ice skating are popular winter activities. At Larter Field you in Dunstable can play sports such as baseball and soccer.

Needs in the Dunstable Region

The SCORP reported that the least popular activity statewide (except in the great harbors of Marblehead, Salem, Manchester and Lynn) is sail boating and sailing. Unless you are a resident on Massapoag Pond, there aren't areas in Dunstable suitable for sailing. Roller blading, skating, running, jogging and camping are less frequently enjoyed by most residents in the Northeast region, according to the SCORP.

Satisfaction Levels

According to SCORP, residents of the Northeast are the least satisfied with the lakes and ponds, bikeways and rivers and streams. In Dunstable, there are many areas for residents to fish; however, unless you live on the lake, there is not as many areas for swimming. With the introduction of the Rail Trail (eleven flat miles along the Nashua River from Ayer to Dunstable/Nashua line) the need for bikeways has been temporarily solved for Dunstable residents. Residents did indicate, however, they would like to see safe bikeways on the main roads. Dunstable also has many beautiful rivers and streams for fishing, canoeing and kayaking.

Facilities Needs

Respondents of the Northeast (2006 SCORP), ranked road biking as the highest priority in facility needs. Ranked second was playground activity, followed by swimming. Many of Dunstable's residents have indicated that they too would like to see the addition of safe road biking. Dunstable's scenic roads draw families and local bike clubs. Although many residents in Dunstable indicated that they would like to see a public swimming area, that may be years away since there doesn't seem to be good access to Massapoag Pond. Larter Field has satisfied the immediate need for playground activity, especially for families watching baseball or soccer games.

Section 8
Goals and Objectives

GOAL	OBJECTIVE	ACTION
Protect Water Resources	Protect streambanks and adjoining floodplains.	Continue to acquire conservation land along streambanks, wetlands, and floodplains while continuing to focus on increasing greenways along Salmon, Unkety, Joint Grass and Black brooks, and the Nashua River. The focus should also be on the large tributary watersheds that feed these major streams and streams draining to the East and Southeast such as Howard's and Blodgett brooks.
	Protect wetlands and their buffers for their ability to reduce flooding and pollution by functioning as natural storage basins and pollutant modifiers.	Update local wetlands bylaw Protect isolated wetlands based on contributory drainage area and wetland
	Protect ground water aquifers and critical recharge areas, particularly for Salmon Brook and Unkety Brook aquifers.	Promote sustainable land use practices in areas tributary to aquifer protection districts.
Land Conservation Priorities	Enlarge and create connections between all existing conservation lands.[1] Establish a Strategic Land Acquisition Committee to spend CPA funding.[2]	Make progress on land acquisition or conservation easements for all these objectives as opportunities arise with priority given to those which meet the objective of being contiguous to and which might also link existing Conservation Commission land. Prioritize lands under Chapter 61, 61A & 61B for potential future town acquisition. Create a system of coordination among the town boards and interested groups to review criteria & set priorities for open space acquisition, and to advise on open space when cluster subdivisions and projects needing site plan review are proposed.
Preserve Scenic Areas	Protect scenic roads including rural roadside views of fields, stone walls,	Encourage Planning Board to take the

[1] Complete greenways along Salmon,Unkety, Black Brooks, and the Nashua River.
[2] This fund could be used, in part, for acquiring Chapter 61, 61A & 61B lands proposed for conversion to development (i.e.: as town's required share in state purchase of Agricultural Preservation Restrictions (APRs). The funds might be secured via town vote; rollback taxes (on Chapter 61, 61A & 61B lands converted to development) or Chapter 61 stumpage taxes devoted to Conservation Commission.

and shade trees particularly along Rte 113 from Tyngsboro line to town center: the "Gateway" to Dunstable	lead on preserving scenic easements and considering the "Gateway" area into town. Support designation of the "Gateway" area as a historic district. Coordinate efforts with historic commission.
Protect hilltops to preserve rural landscape views and prevent environmental issues arising from excessive runoff and erosion.	Amend cluster ordinance (Open Space Residential Development)[3], to encourage hilltops to be permanently protected as open space (i.e.: in proposed cluster developments) Acquire conservation land on hilltops, particularly Forest Hill. Drake Hill, Spectacle Hill, and Nuttings Hill. Consider a Steep Slope Overlay District as a special permit district where site plan review is required for all development.[4]
Preserve open fields.	Encourage agricultural use through Agricultural Preservation Restrictions (APRs). Encourage establishment and operation of community garden areas. Review available privately owned fields for municipal acquisition.[5]
Preserve scenic quality in new residential developments.	Adopt incentives for developers to protect natural resources through allowing flexibility in site planning to spare areas where visibility is high, such as hillsides, fields, shorelines. Establish a design review board …"to raise the general quality of subdivision site design".

[3] As recommended by the 1990 Rural Planning and Design Study by IEP.
[4] Criteria to be reviewed would be the amount of clear-cutting, slopes of driveways and roads, capability of drainage controls to handle severe storms, and heights of buildings.
[5] Alternatively, the town could lease out acquired fields for open space uses, to provide income to retire the bond issue floated for town land purchase.

Protect Farmlands	Conduct public outreach.	Encourage private economic use of open space through continuing agricultural use. Adopt an agriculture preservation overlay. Encourage local farmers markets.
Protect Wildlife Habitat	Enhance protection of rare species habitats.	Acquire conservation land or easements to protect Natural Heritage sites and vernal pools. Identify and certify vernal pools. Pass a bylaw to protect isolated upland vernal pools. Encourage donations of upland wildlife habitat for conservation.
	Preserve wetlands and water bodies, and contiguous vegetative buffers around them.	Educate about the value of wetlands and their buffers for wildlife habitat.
	Preserve large blocks of forestland.	Encourage private economic use of open space through forest management and inform landowners about County Conservation District and New England Forestry Foundation assistance.
	Encourage a diversity of native plant cover and mixed stands of hardwoods and conifers by educating about ways to foster plant diversity.	Encourage more forestland owners to enroll in Chapter 61. Educate community about: ●forestry practices that create openings in forest stands, to encourage sprout growth for wildlife food; ●leaving dead trees for dens and nests, the planting of native nut or fruit-bearing trees, and preserving abandoned orchards where possible; ●hedgerows along field edges to provide food and cover for small mammals, game birds and songbirds, and encourage mixed shrub and sapling growth along the woodland edge of power line rights-of-way.
	Encourage expansion of mature growth forest areas.	Manage land owned by the Conservation

		Commission using above practices.
	Protect wildlife habitat when land is subdivided.	Educate private landowners about alternatives to standard forestry plans, notably establishing no-cut areas in forestry plans, through public workshops.
	Work with DEM and DFW to obtain large parcels.	Adopt design controls in subdivision regulations that address wildlife habitat protection.
	Obtain Forest Legacy Designation	
Protect Lands with High Recreational Potential	Protect shoreline Greenways that include trails, fishing, boating, and swimming access.	Acquire water and shoreline access for fishing, hiking and boating; and through increasing Greenways along Salmon and Unkety Brooks, and the Nashua River.
	Support Rail Trails conversions.	Seek trail connections on old Red Line Railway along Salmon Brook.
	Develop trail network.	Adopt design controls in subdivision regulations that protect trails.
		Form Trail Committee; then inventory and increase public access to the existing trail network.
Preserve Historic Places	Support the nomination of historic districts to the national register of historic places	Educate how a Historic District can increase local control.[6]
		Educate property owners of the historic value of their properties
	Continue to research all significant historic sites.	Encourage nominations for the National Historic Register for all sites that have national historic potential.
Encourage more participation in conservation.	Provide more information about existing and potential sites as residents need to know about the town's resources (& their	Update guide map to existing conservation areas, add trails to it; make videos about lands' history and uses, put them in library, local cable and town

6 Regulations under which a Historic District Commission operates are locally determined, setting the design controls to assure that new structures and uses or alterations of existing structures are compatible. Also, the presence of a Historic District influences state highway plans.

	conservation benefits). Educate about how saving land saves the town money in the long run.	website. Publicize the tax costs associated with growth vs. the tax costs associated with conservation. Make copies of Open Space & Recreation Plan for all town boards.
Protect environmental resources through strengthened development controls.	Improve local wetlands, floodplain, and other bylaws dealing with environmental issues.	Keep informed of improvements to bylaws in neighboring towns. Design and propose measures applicable to Dunstable. Adopt smart growth and low impact development bylaws.
Improve the use of existing conservation areas.	Develop a list of projects for trails and town conservation/recreation land management, make list available to school groups, scouts, other town groups to encourage their participation in carrying out improvements.	Possible projects to do: * Signs on every piece of conservation land with information about use; * Bridges and other improvements on trails; * Hikes led by people familiar with the areas; * Develop ecological inventories & management plans for conservation lands based on ecological records and scientific reasoning to protect ecosystems; * Maps and information about lands; * A home page on the internet describing conservation lands and uses; * Gates to control access.

GOAL	OBJECTIVE	ACTION
Develop Facilities and/or partnerships to meet recreational needs:	Water access for Swimming.	Acquire additional town swimming area and time on Massapoag Pond, or seek partnership with the Y Camp to allow for town public use.
	Water access for Fishing and Boating.	Support Greenway acquisition along Dunstable's major streams to allow for fishing and boating access.
	Trail improvements	Ask state or town Highway Department to mark a bike lane on the widened stretch of Route 113 between the Pepperell line and the town center.
		Improve the signage on existing recreational trails.
		Create Trail Map for Dunstable, post on website.
	Riding ring for horses.	Explore siting possibilities, perhaps using Pelletier property.
	Define a list of projects for town conservation/recreation land management. Make list available to school groups, scouts, other town groups.	Promote participation of community groups in carrying out projects.
Improve the use of existing recreation facilities	Involve more people in creating local recreational events in summertime.	Encourage people to lead recreational activities, such as: basketball tournament, soccer tournament, tennis tournament.
	Designate areas/trails for motorized use.	Bring these users on board to plan this system, to encourage awareness of the importance of open space conservation and abutters' concerns.

Section 9
Seven Year Action Plan

Note: The timeframes listed in the seven year action plan are a guide. Items not completed in a stated time period, may be brought forth into the next one.

SECTION 9
SEVEN YEAR ACTION PLAN
Years One through Seven Continuing Actions: Ongoing Conservation Programs

Action	Goals/Objectives to be Fulfilled	Responsible Party1	Funding Source
Continue to acquire conservation land along stream banks, wetlands, and floodplains. Focus on increasing Greenways along Salmon, Unkety, and Black Brooks, and the Nashua River.*	Protect Water Resources	All	A,B,D,E
Protect isolated wetlands based on contributory drainage area and wetland	Protect wetlands and their buffers for their ability to reduce flooding and pollution by functioning as natural storage basins and pollutant modifiers.	CC	A,B,D,E
Acquire Forestry Legacy Program designation	The Forest Legacy Program protects important forests from conversion to nonforest uses. These forests provide essential wildlife habitat, protect water quality, offer outstanding recreation opportunities, afford outstanding scenic views, are home to historic sites, and/or provide the opportunity to continue traditional forest uses. A Federal-State partnership allows landowners to keep their land private while ensuring it remains forest forever through the use of conservation easements.	CC,FC	B
Make progress on land acquisition or conservation easements for all these objectives as opportunities arise. *	Enlarge existing conservation lands. Link all conservation lands and create connections. Complete greenways along major brooks and the Nashua River.	All	A,B,D,E
Acquire conservation land on hilltops, Forest Hill, Drake Hill, Spectacle Hill, and Nutting Hill. *	“”	All	A,B,D,E
Encourage agricultural use through Agricultural Preservation Restrictions (APRs).	Preserve open fields.	CC,PB, RC	N/A
Review available fields for municipal acquisition.	“”		A

Encourage private economic use of open space through continuing agricultural use	Conduct public outreach.	CC	N/A
Acquire conservation land or easements to protect Natural Heritage sites and vernal pools.	Enhance protection of rare species habitats.	CC	A,B,D,E
Encourage donations of upland wildlife habitat for conservation.	“”	CC	E
Educate about the value of wetlands and their buffers for wildlife habitat.	Preserve wetlands and water bodies, and contiguous vegetative buffers around them.	CC	F
Encourage private economic use of open space through forest management and inform landowners about County Conservation District and New England Forestry Foundation assistance.	Preserve large blocks of forestland.	CC,FC	B,E
Encourage more forestland owners to enroll in Chapter 61.	“”	CC	N/A
Educate community about: -forestry practices that create openings in forest stands, to encourage sprout growth for wildlife food; -leaving dead trees for dens and nests, the planting of native nut or fruit-bearing trees, and preserving abandoned orchards where possible; -hedgerows along field edges in order to provide food and cover for small mammals, game birds and songbirds, and encourage mixed shrub along the woodland edge of power line rights-of-way. -encourage proper timing of mowing and other control actions used by farms. -promote development of community gardens on conservation & private land.	Encourage a diversity of native plant cover and mixed stands of hardwoods and conifers by educating about ways to foster plant diversity.	CC	C,D,E
Manage land owned by the Conservation Commission in order to promote healthy diverse ecosystems in high potential resource areas.		CC,PB, RC	C,D,E

Acquire water and shoreline access for fishing, hiking and boating; and through increasing Greenways along Salmon and Unkety Brooks, and the Nashua River. *	Protect shoreline Greenways that include trails, fishing, boating, and swimming access.	CC,PB, RC	A,B,D,E
Seek trail connections on old Red Line Railway along Salmon Brook.	Support Rail Trail conversions.	CC,PB, RC	A,B,D,E
Keep informed of improvements to bylaws in neighboring towns. Design and propose measures applicable to Dunstable.	Improve local wetlands, floodplain, and other bylaws dealing with environmental issues.	CC	A,C,D,E
Possible projects to do: - Signs on every piece of conservation land with information about use; - Bridges and other improvements on trails; - Hikes led by people familiar with the areas; - Develop ecological inventories & management plans for conservation lands based on ecological records and scientific reasoning to protect ecosystems; - Maps and information about lands; - A home page on the internet describing conservation lands and uses; • Make copies of this plan available to Boards and residents throughout the community.	Develop a list of projects for trails and town conservation/recreation land management, make list available to school groups, scouts, other town groups to encourage their participation in carrying out improvements.	CC,PB, RC	A,B,D,E G

1CC=Conservation Commission; HC=Historical Commission; PB=Planning Board; RC=Recreation Commission; WC=Water Commission; All=all of above plus Board of Health, Board of Selectmen, ZBA, etc.

Years One and Two 2011-2012

Seek to acquire land, easements and restrictions.		CC	A,B,D,E
Begin to conduct an inventory of conservation commission lands, assets, vulnerabilities so as to be able to plan for and implement wise actions in relation there to.		CC	A,B,D,E

Work to improve and update the web page to better inform the community of Conservation Commission efforts.		CC	N/A
Form Forest Legacy Committee	Research program to determine process of designation, determine target forest parcels.	CC	N/A
Prioritize lands under Chapter 61, 61A & 61B for potential future town acquisition. Create a system of coordination among the town boards & interested groups to review criteria & set priorities for open space acquisition, and to advise on open space when cluster subdivisions & projects needing site plan review are proposed	Establish a town fund for Strategic Land Acquisition; coordinate among town boards in a Strategic Land Acquisition Committee.[2]	All	N/A
Encourage Planning Board and Historic Commission to take the lead on preserving scenic easements and considering the "Gateway" area into town.	Protect scenic roads including rural roadside views of fields, stone walls, and shade trees particularly along Route 113 from Tyngsborough line to town center: the "Gateway" to Dunstable.	PB,HC	N/A
Amend cluster ordinance (Open Space Residential Development)[7], to encourage hilltops to be permanently protected as open space (i.e.: in proposed cluster developments)	Protect hilltops to preserve rural landscape views and prevent environmental problems from excessive runoff and erosion. Preserve scenic quality in new residential developments.	PB	N/A
Adopt incentives for developers to protect scenic resources through allowing flexibility in site planning to spare areas where visibility is high, such as hillsides, fields, shorelines.	Preserve scenic quality in new residential developments.	PB	N/A
Pass a bylaw to protect isolated upland vernal pools.	Enhance protection of rare species habitats.	CC	N/A
Form Trail Committee; then inventory and increase public access to the existing trail network.	Develop trail network.	CC; then Trails Committe	N/A
Adopt smart growth & limited impact development bylaws.	Consider a Historic District for the town center.	PB,HC	N/A

[2] As recommended by the 1990 Rural Planning and Design Study by IEP

Years Three and Four - 2013-2014

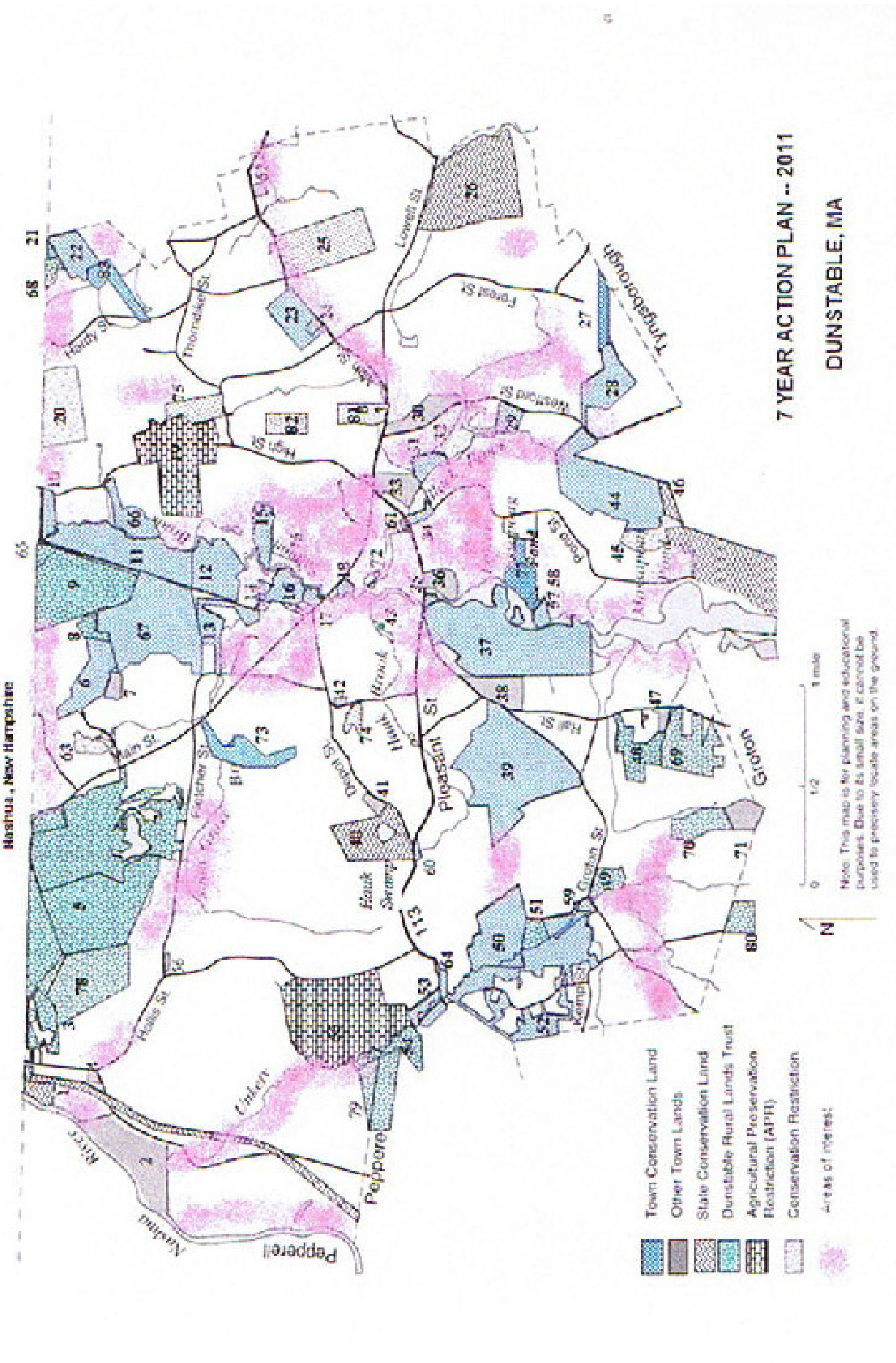
Improve mapping for floodplain protection bylaw.	Protect streambanks and adjoining floodplains	CC, PB	N/A
Consider a Steep Slope Overlay District as a special permit district where site plan review is required for all development.	Protect hilltops to preserve rural landscape views and prevent environmental problems from excessive runoff and erosion.	PB	N/A
Establish a design review board "to raise the general quality of subdivision site design"	Preserve scenic quality in new residential developments.	HC, PB	N/A
Continue process of acquiring Forest Legacy Designation	To have designation process under way and have a list of target parcels.	CC, FC	A,B, D,E
Adopt design controls in subdivision regulations that protect trails.	Develop trail network.	PB	N/A
Guide map to existing conservation areas, add trails to it; make videos about lands' history and uses, put them in library and on local cable.	Provide more information about existing and potential sites as residents need to know about the town's resources (& their conservation benefits).	CC	G
Publicize the tax costs associated with growth vs. the tax costs associated with conservation.	Educate about how saving land saves the town money in the long run.	CC	N/A

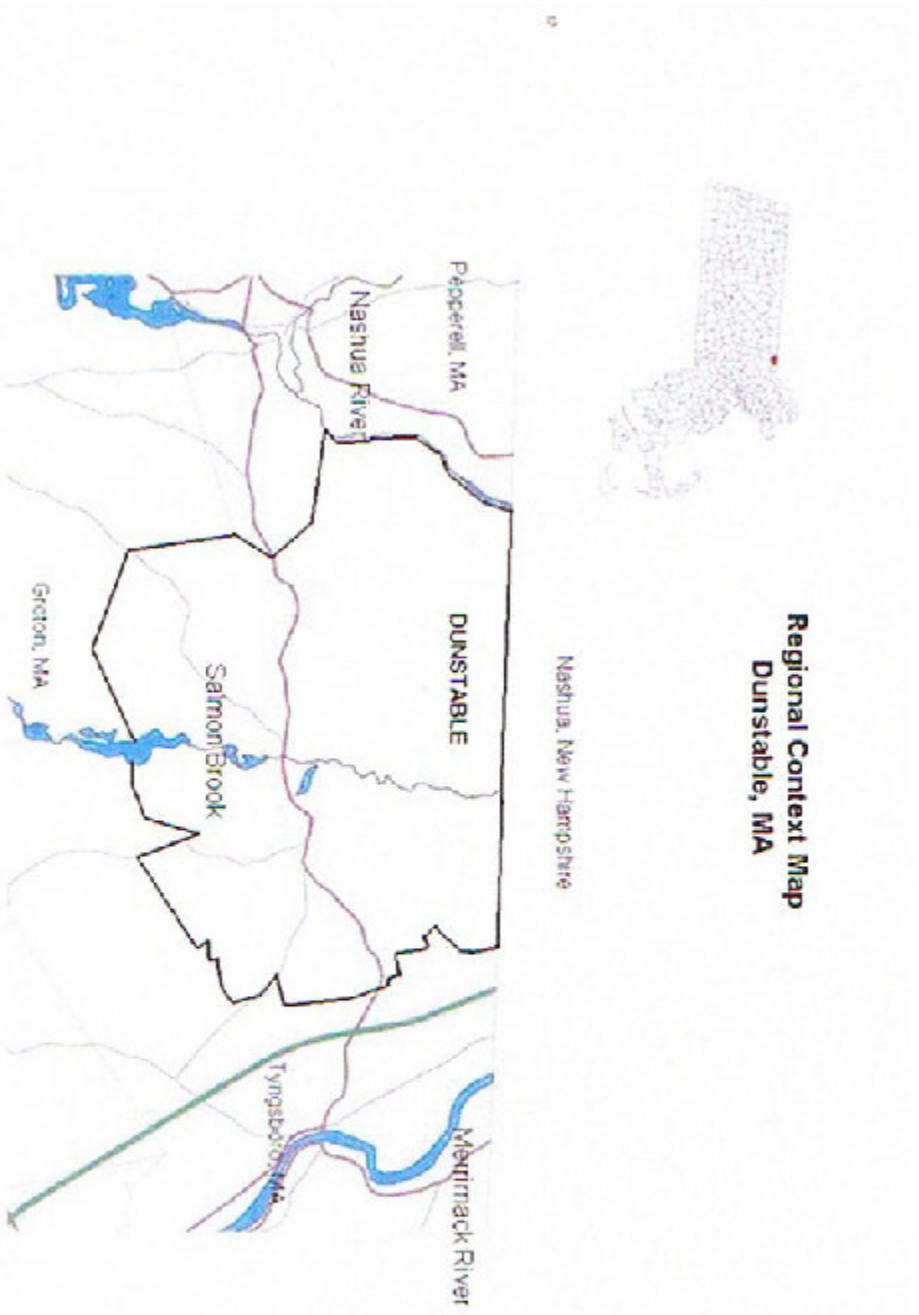
Years Five thru Seven – 2015-2017

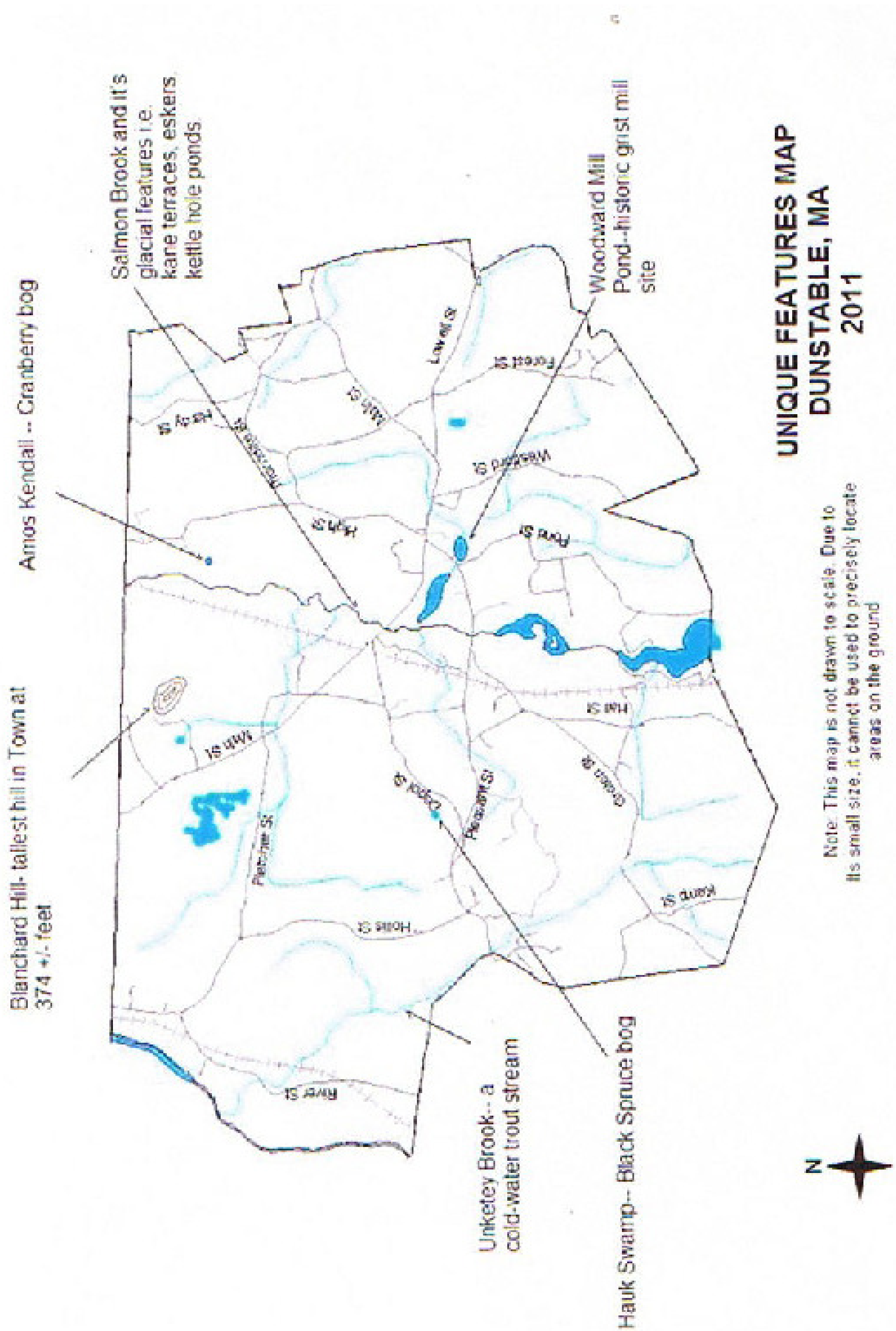
Seek designation of the "Gateway" area as a historic district.	Protect scenic roads including rural roadside views of fields, stone walls, and shade trees particularly along Route 113 from Tyngsborough line to town center: the "Gateway" to Dunstable.	HC,PB	A,B,D,E,G
Adopt design controls in subdivision regulations that address wildlife habitat protection.	Protect wildlife habitat when land is subdivided.	PB	A,B,D,E,G
Educate private landowners about alternatives to standard forestry plans, notably establishing no-cut areas in forestry plans, through public workshops.	Encourage old growth forest.	CC,FC	A,B,D,E,G
Educate how a Historic District can increase local control.	Encourage the Historic Commission's efforts to consider a Historic District for the town center.	HC	A,B,D,E,G
Encourage nominations for the National Historic Register for all sites that have national historic potential.	Continue to research all significant historic sites.	HC	A,B,D,E,G

* Items that would require funding. The primary funding sources for land acquisition would include the following:

A. Funds from CPA (if approved)
B. State Self Help programs
C. Christmas tree sales
D. Income from forestry practices on select parcels owned by the Conservation Commission
E. Donations of money from citizens
F. Notice of Intent Fees
G. Volunteer Groups (i.e. Boy Scouts)


7 YEAR ACTION PLAN -- 2011
DUNSTABLE, MA
Nashua , New Hampshire
Pepperell
Groton
Tyngsborough
Town Conservation Land
Other Town Lands
State Conservation Land
Dunstable Rural Lands Trust
Agricultural Preservation Restriction (APR)
Conservation Restriction
Areas of interest
Note: This map is for planning and educational purposes. Due to its small size, it cannot be used to precisely locate areas on the ground.
1 mile


Regional Context Map
Dunstable, MA
Nashua, New Hampshire
Pepperell, MA
Nashua River
DUNSTABLE
Groton, MA
Salmon Brook
Tyngsboro, MA
Merrimack River


Blanchard Hill- tallest hill in Town at
374 +/- feet
Amos Kendall -- Cranberry bog
Salmon Brook and it's glacial features i.e. kame terraces, eskers kettle hole ponds
Woodward Mill Pond--historic grist mill site
UNIQUE FEATURES MAP
DUNSTABLE, MA
2011
Note: This map is not drawn to scale. Due to its small size, it cannot be used to precisely locate areas on the ground
Unketey Brook-- a cold-water trout stream
Hauk Swamp-- Black Spruce bog
N

Section 10

Public Comment

Section 11

References and Appendices

SECTION 10
PUBLIC COMMENT

The following boards and agencies were sent copies of the draft plan to review and comment upon prior to the submittal to the Massachusetts Division of Conservation Services for their review.

Dunstable Board of Selectmen/Chief Elected Official
Dunstable Board of Health
Dunstable Historical Commission
Dunstable Parks Commission
Dunstable Planning Board
Dunstable Recreation Commission
Dunstable Board of Appeals
North Middlesex Council of Governments

SECTION 11
REFERENCES AND APPENDICES

In addition to the 1976 Dunstable Open Space and Recreation Master Plan which was completed by Alfred Lima of the Environmental Collaborative, people/publications listed in the 1998 update by Liz Fletcher, Planner and the 2005 update with help from Al Futterman and James DeNormandie of the Nashua River Watershed Association, the following people/publications were sources of information and assistance for the 2010 plan.

All Members of the Dunstable Conservation Commission
Cheryl Mann, Dunstable Conservation Commission Secretary
Carol Skerrett, Dunstable Town Clerk
Vicki Tidman – Dunstable Assessor
Members of the Dunstable Parks and Recreation Commission
Members of the Dunstable Board of Health
Farmland Information Center Fact Sheet – American Farmland Trust – August 2007
Northern Middlesex Council of Governments – Regional Traffic Volume Report: 2008 Edition
Northern Middlesex Council of Governments – Greater Lowell Annual CEDS Update for 2008
U.S. Census Bureau – American FactFinder – Dunstable
Mass.gov – Labor and Workforce Development
www.city-data.com – website on Town of Dunstable
2006 Statewide Comprehensive Outdoor Recreation Plan (SCORP)

LIST OF APPENDICES

APPENDIX A
Americans with Disabilities Act / Section 504 Self-Evaluation
Open Space and Recreation Plan, Dunstable, Massachusetts

Introduction

The Americans with Disabilities Act (ADA) and Section 504 of the National Rehabilitation Act of 1973 are federal laws that provide for people with disabilities. Section 504 requires all communities to conduct a self-evaluation on all their facilities and programs. All federally-assisted park and recreation programs must comply with these laws. Since many state grant programs also involve federal funds, a community needs to meet ADA/Section 504 requirements to be eligible to receive grants. This ADA/Section 504 Self-Evaluation has been done to enable Dunstable to assess how it has met and plans to meet the needs of the disabled, as part of the town's Open Space and Recreation programs. The self-evaluation is presented in three parts: Part I, Administrative Requirements; Part II, Program Accessibility; and Part III, Employment Practices. Accompanying documentation includes the recommendations of Dunstable's 1993 Americans with Disabilities Act Study Committee Report, and the Equal Employment Authority clause of the 1991 Personnel Policy Revisions. A Facility Inventory covering all Dunstable's conservation and recreation lands is also included.

Summary of Accomplishments

The town of Dunstable has adopted the recommendations of its Americans with Disabilities Act Study Committee Report of November 1993, as a guide for bringing the town into compliance with ADA. These recommendations address personnel policies, municipal services, and public input. They accompany this Self-Evaluation. Since the Personnel Policy Revisions of September 23, 1991 were adopted, the town of Dunstable has had in place a non-discrimination policy through its Equal Employment Authority clause. Dunstable is a small town having only a handful of full-time employees working more than 20 hours a week. The town of Dunstable complies with ADA/Section 504 by standing ready to offer municipal services needed by the disabled as they request them. It is town policy to provide necessary services when asked by a disabled person, including TDD communications, verbally presented information, and large type. Renovations made to the Town Hall included an elevator for the disabled. When classrooms were added to the town's elementary school, wheelchair access was included. The existing Town Field now has disabled access for its playground, ballfields, and basketball court. The facility at Larter Field includes disabled accessibility.

Part I. Administrative Requirements

1. Designation of ADA/504 Coordinator

Selectman Walter F. Alterisio is Dunstable's ADA Coordinator. He has a depth of experience in this field, having served as chairman of Dunstable's Americans with Disabilities Act Study Committee.

2. Grievance Procedures

These are in place for town employees as part of the Personnel Policy Revision effective March 1, 2004. A copy of this Personnel Policy accompanies this Self-Evaluation.
A similar procedure to address grievances from the public regarding municipal services was adopted by the town on March 1, 2004. The text of Dunstable's "Equal Access to Municipal Facilities and Services" procedure accompanies this Self-Evaluation.

3. Public Notification Requirements

The town of Dunstable has adopted a non-discrimination policy under the Equal Employment Authority of its Personnel Policy. A similar non-discrimination policy statement to address the general public was March 1, 2004. It is included as the "Equal Access to Municipal Facilities and Services" policy.

4. Participation of Individuals with Disabilities or Organizations Representing the Disabled

The Town of Dunstable does not have a Commission on Disabilities. When the North Middlesex Council of Governments was contacted for their recommendations on regional organizations, it was discovered that the City of Lowell's Commission on Disabilities was no longer active. Local people familiar with disability issues have been consulted: Mr. Walter Alterisio, Selectman and Chairman of the town's Americans with Disabilities Act Study Committee; and Dunstable's Council on Aging, through Ruth Tully, Elder Assistant.

Part II. Program Accessibility

Dunstable Recreational Facilities

The Dunstable Recreation Commission is a volunteer group whose major focus is on providing organized sports activities for school-aged children. The Commission was involved in the development of Larter Field, on land given to the town by Margaret Larter. Three parcels of land come under the jurisdiction of the Recreation Commission. In addition to Larter Field there is the existing Town Field. The Horse Hill Quarry parcel is being reserved as a future site for playing fields.

Town Field

In co-operation with the Groton-Dunstable Regional School District, the Recreation Commission oversees athletic programs at the existing Town Field next to the elementary school in the town center. This 15 acre recreation area is maintained with the assistance from the School District and Dunstable Highway Department.

Facility Inventory
Game fields for baseball and soccer
Basketball court
Tennis court
Small playground with swings and wood and tire structure at elementary school
Parking area: 50 car capacity shared with school, includes 2 designated handicapped parking places next to ramp near school entrance.
Pathway: a firm level pathway 4' wide connects the playground to the ball fields and basketball court.

Transition Plan
1. Physical Obstacles: With the pathway connecting the facilities, the game fields, basketball court, and playground at the Town Fields are essentially universally accessible. However, the playground lacks equipment accessible to children with disabilities.
2. Necessary Changes: Playground equipment such as therapeutic swings and therapeutic padding for the play area.
3. Schedule: There are no plans to address these changes at this time.
4. Responsibility: This playground is on town property and is used by the Groton-Dunstable Regional School District. The Dunstable Recreation Commission has assisted in refurbishing the playground. Coordination between the School District and the Recreation Commission would be necessary for future playground improvements.

Larter Field

Dunstable's primary area of active recreation is the Larter Field game fields and associated facilities on an 8-acre portion of this 26-acre parcel. The Larter Field Subcommittee of the Recreation Commission oversaw this project that transformed the portion of the property that was a former gravel removal site into a major town recreation area. The 1997 Town Meeting voted funding to proceed with Phase I of the Master Plan. Local athletic clubs such as the Dunstable Youth Athletic Association also contributed to the facilities at Larter Field.

The Larter Field area abuts one of Dunstable's largest conservation areas, the Spaulding Proctor Reservation, and includes a stretch of the old Red Line Railroad right-of-way which is presently used as a trail. The Conservation Commission foresees that a connection between these areas offers a great opportunity for a universally accessible nature trail. This plan is described under the section on Dunstable Conservation Areas.

Facility Inventory
Game fields for baseball and soccer
Parking area: 60 car capacity would include 3 spaces designated for handicapped
Pathway: A half-mile long, 4'wide, paved walkway extends around the perimeter of the game fields. It provides access for wheel-chairs from the parking area to spectator areas, picnic area, drinking fountain, and restrooms.
Restrooms: A septic system is planned to serve the 20' x 40' storage/concession building. Restrooms would include one universally accessible toilet.

Drinking fountains: At least one would be universally accessible
Playground: There is a small playground with swings and a climbing structure
Picnic tables: There is a small picnic area near the playground.
Game field spectator areas: Bleachers have been installed near the ball fields.

The Dunstable Parks Department maintains Larter Field, in the form of mowing and road care.

Horse Hill Quarry

This 6.25-acre parcel of land on Hall Street is under the jurisdiction of the Recreation Commission, given to the Commission as part of a private development project on adjoining land. This parcel is an old field (not a quarry) which the Commission intends to keep in reserve as a future site for playing fields. There are no recreational facilities here at present.

Dunstable Conservation Areas

The Dunstable Conservation Commission is responsible for the management of the town's many conservation areas. The members are all volunteers; they are assisted by a secretary whose services are shared with the Planning Board and Water Department. One land management problem the Commission has to deal with is illegal use of and damage to conservation area trails by all-terrain vehicles. A significant part of the Commission's workload is enforcement of the Wetland Protection Act. In coordination with the Dunstable Rural Land Trust, the community's private, non-profit conservation group, the Commission has sponsored walks on various conservation lands. The Commission also sponsors the Unkety Brook Stream Team, which participates in the Nashua River Watershed Association's Stream Monitoring Program. The Stream Team and the Commission are working together to implement the Action Plan they have devised to protect Unkety Brook. The ADA/Section 504 Facility Inventory indicates that most of Dunstable's conservation areas are relatively wild and difficult to access, even for the unhandicapped, and so will remain unimproved for universal access. The Commission's long-term goal is to make a place available to the disabled for each of the major activities carried on at conservation areas: trail use, boating, and fishing. After reviewing its lands, the Commission has determined that the most appropriate areas to make accessible for these activities are the Shaw Conservation Area on Pleasant Street and the Spaulding Proctor Reservation on Groton Street. Transition plans are below:

Shaw Conservation Area

The Shaw Conservation Area is a very pleasant open space quite close to the town center. Although only 3 acres in size, it offers a variety of outdoor experiences -- fishing on the millpond that is a dammed stretch of Black Brook, exploring the pond and its backwaters by canoe or small boat, strolling along the pond shore, watching the ducks and other wildlife that frequent the pond. With the creation of a shoreline pathway and the addition of a small dock, all these experiences could be made accessible to the handicapped. At present, there is a usable although not designated handicapped parking space that allows for nature observation at the pond. This space could readily be connected with the shore by a gently graded firm pathway along the open shoreline. The well-mowed grassy slope

between the parking area and the pond would present few obstacles for such a path. This path could end at a small dock with handrails which would allow the disabled to enter a small boat or to fish the pond.

Facility Inventory
Mill Pond with undeveloped shoreline, mostly forested with wetland growth in ackwaters (good waterfowl habitat) and mowed grassy slope between parking area and pond. Parking area: 2 car capacity level graveled space edged with logs. Parking on roadside also possible. Footpath along shore (somewhat rough and narrow)

Transition Plan
1. Physical Obstacles are the lack of a pathway across the grassy slope to the pond shore, and the continuous barrier of logs placed at the edges of the parking area to prevent vehicles from driving on the grass.
2. Necessary Changes: A firm level pathway 4' wide less than 5% slope with hard-packed surface extending from the parking area to the shoreline is needed. One of the parking spaces should be designated as a handicapped space, with a 4-foot wide opening cut through one of the logs near this space to allow access to the pathway. This pathway would connect the parking area with a small dock on the pond. This dock would need handrails to assist with fishing and boating.
3. Schedule for completion: There is no schedule to carry out this plan at this time
4. Responsibility: The Conservation Commission has responsibility for managing the Shaw Conservation Area, but the construction of any facilities here would need the support of Town Meeting. The Commission's role would be to present the transition plan to Town Meeting for approval, and then to oversee its implementation once the necessary funds were voted.

Spaulding Proctor Reservation

This 98-acre conservation area has extensive frontage on Lower Massapoag Pond, a ponded stretch of Salmon Brook. Access to Lower Massapoag for the disabled would be extremely difficult to create at Spaulding Proctor Reservation due to the very steep slope that runs from the roadside parking at Jack's Bridge on Pleasant Street down to the canoe launch. Extensive wetland filling would be required to overcome this slope; the Commission determined that boat access for the disabled at Shaw Conservation Area would be more feasible.

Spaulding Proctor's forests have a network of trails and woods roads that are accessible from Groton Street and the old Red Line Railroad right-of-way, which is presently used by all-terrain and other motorized vehicles. This motorized accessibility creates a problem within the Reservation, causing trail erosion and rutting, and risks to the safety and enjoyment of other trail users. It is an ongoing effort to police and prevent motorized use on the Reservation's trails. Because much of the railroad right-of-way is privately owned, it is very difficult to prevent motorized use, so that it would not be appropriate to develop the Reservation's existing trail system for the disabled. However, the Conservation Commission foresees that the town-owned portion of the old Red Line Railroad which abuts Larter Field offers a great opportunity to connect the Field with

Spaulding Proctor Reservation, in a way that would make it possible for the disabled to experience the beauty of this natural area in safety. Motorized access on the town's stretch of the railroad can be controlled, so that it can link the universally accessible pathway at Larter Field with a nature trail loop that can be created in the Reservation.

Facility Inventory
Large forested area on Massapoag Pond, abutting the old Red Line Railroad and Larter Field.
Land access: several woods roads that are difficult to control against access by off-road vehicles.
Water access: canoe launch at Jack's Bridge on Pleasant Street, at bottom of steep slope next to bridge, roadside parking.

Transition Plan
1. Physical Obstacles are the difficulty of controlling motorized use of private former railroad right-of-way, which connects with existing reservation woods roads and trails.
2. Necessary Changes: Control motorized access to town's stretch of railroad; connect with Larter Field's pathway that will be disabled accessible. Grade railroad to create a firm level pathway 4 feet wide with less than 5% slope (hard-packed surface) linking Larter Field pathway with a disabled-accessible nature trail loop to be constructed in Spaulding Proctor Reservation.
3. Schedule for completion: There is no schedule to carry out this plan at this time. Since the Shaw Conservation Area is more visible to the public and nearer the town center, it may be appropriate to proceed with making this area more accessible to the disabled prior to creating the Spaulding Proctor nature trail.
4. Responsibility: The Conservation Commission has responsibility for managing the Spaulding Proctor Reservation but the construction of any facilities here would need the support of Town Meeting. The Commission's role would be to present the transition plan to Town Meeting for approval, and then to oversee its implementation once the necessary funds were voted.

Unkety Woods Preserve

The Conservation Commission acquired this 62-acre Christmas tree farm on Unkety Brook with the assistance of a Massachusetts Self-Help Fund grant. The property includes mowed paths suitable for universal use that lead from the 5-car parking area. The Conservation Commission’s Management Plan states that trails will be mowed and surfaces maintained in a passable condition. For the past 9 years, the Conservation Commission has held a “Cut your own tree” event two weekends in December. This has helped in the maintenance of the trees as well as creates an income to put towards further land acquisition.

Part III. Employment Practices

1. Recruitment
A. Job announcements include a non-discrimination statement. They are posted in accessible areas such as the Town Hall and Post Office, and are advertised in regional newspapers such as the Lowell Sun and the Groton Landmark. Job announcements are made available in auditory form; they can be read to prospective applicants upon request. No recent job announcements are available.
B. Interviews address the applicant's qualifications for the job. The job's essential functions, physical needs, education and experience requirements are discussed. It is illegal to inquire about an applicant's disability and its severity; this is not discussed in an interview.
2. Personnel Actions
The Personnel Policy Revisions of March 1, 2004 cover responsibility, equal employment authority, employment status, orientation, job descriptions, holiday, vacation, and sick pay, personal days, bereavement leave, and the grievance procedure. The nondiscrimination policy set forth in the equal employment authority applies to all provisions of the Personnel Policy. As far as the town is aware, none of Dunstable's full-time town employees have disabilities.
3. Leave Administration
Policies for granting leave do not adversely affect qualified employees with disabilities. The non-discrimination policy set forth in the equal employment authority applies to leave policies.
4. Training
The 180-day orientation period included in the town's Personnel Policy allows both the employee and those responsible for direct supervision to evaluate skills and abilities appropriate for the job position. This policy would provide for training to be administered in a manner that allows equal participation by qualified employees with disabilities.
5. Tests: The town of Dunstable does not administer tests for jobs.
6. Medical Examinations/Questionnaires
The town of Dunstable does not administer pre-employment medical examinations at present.
7. Social/Recreational Programs
As the need arises, community sponsored programs will be made accessible to employees with disabilities.
8. Fringe Benefits
Employees who work more than 20 hours a week are eligible for health insurance. Employees with disabilities will receive the same employee benefits as non-disabled employees.
9. Collective Bargaining Agreements: The Police Department is now union. Dunstable's other town employees are not unionized.
10. Wage and Salary Administration
Compensation depends on the title and classification of the individual's job. Employees with disabilities will not be offered different rates of compensation solely on the basis of disability.

FACILITY INVENTORY of TOWN CONSERVATION and RECREATION AREAS for Americans with Disabilities Act/Section 504 Self-Evaluation

ADA/504 ACCESSIBILITY TRANSITION PLAN
Improved to Improvements Unimproved
SITE Management Acres Location Standard Planned (give reason)

Town Field Recreation Com. 15 Main St. Yes, accessible pathway
and Common and Parks Dept. to spectator area, game fields,
basketball court, playground
Larter Field 26.3 Groton St. Yes, Parking, walkway, plumbing,
and Parks Dept. picnic tables, game fields,
Horse Hill Quarry Recreation 6.25 Hall St. Future potential site for game fields. No Commission improvements planned at present.
Shaw Conservation 3 Pleasant St. Yes, parking for pond Pathway for fishing access along shore; Conservation Area Commission viewing, nature study also, small dock for canoe access.
Unkety Woods Conservation 62 Woods Court Yes, mowed paths accessible
Preserve Commission from 15-car parking area
Spaulding-Proctor Conservation 98 Pleasant St. Nature trail loop connecting with Larter Reservation Commission & Groton St. Field walkway along Red Line Rail Trail bordering Larter Field
Arched Bridge Conservation 12 High Street access to bridge is gravel, occasionally maintained. Conservation Area Commission is rough, distant from town road; Salmon Brook launch unsuitable because no accessible take-out downstream.
10 Appendix A 10

ADA/504 ACCESSIBILITY TRANSITION PLAN
Improved to Improvements Unimproved
SITE Management Acres Location Standard Planned
Bacon Conservation 14 off Main St. backland, no formal paths,
Conservation Area Commission across brook from Town Field
Biron Conservation 10 Westford St. no formal pathways,
Conservation Area Commission steep slopes
Blanchard Hill Conservation 39.38 Sky Top Lane no formal pathways
Open Space Commission wildlife habitat
Blue Heron Conserv. Com. 2 Pleasant St. steep beside bridge
Chapman Conservation 1.7 Pleasant St. no formal pathways,
Conservation Area Commission wetland
Craven Conservation 2 Pleasant St. no formal pathways,
Conservation Area Commission wetland
English Conservation 34 Westford St. no formal pathways, wild
Wildlife Refuge Commission with sizable wetlands
Farnsworth Conservation 96.3 Westford St. no formal pathways, wild

Wildlife Refuge Commission rough steep slopes
Fox Run Conserv. Com. 2.14 off Main St. backland
Gardner Conservation 3 Pleasant St. no formal pathways,
Conservation Area Commission wetland
Goldthwaite Conservation 1.3 Lower Mass- backland, accessible by
Conservation Area Commission apoag Pond boat only
Holmes Conservation 5 Lower Mass- backland, accessible by
Conservation Area Commission apoag Pond boat only
11 Appendix A 11

ADA/504 ACCESSIBILITY TRANSITION PLAN
Improved to Improvements Unimproved
SITE Management Acres Location S tandard Planned (give reason)
Hogg Conservation 27 Lower Mass- backland, accessible by
Conservation Area Commission Massapoag Pond boat only
Jointgrass Brook Conservation 21 Mill and wetland
Conservation Area Commission Swallow St.
Kennedy Conservation 50 off High St. backland, across Salmon Brook
Conservation Area Commission from Arched Bridge Cons. Area
Keyes Meadow Conservation 18 Groton St. no formal pathways,
Conservation Area Commission wetland
Proctor Conservation 35 off High St. backland, south of
Conservation Area Commission Kennedy Cons. Area
Robbins Farm Conserv. Com. 36.86 Hollis St. no formal pathways
Sargent Conservation 3 Main St. no formal pathways,
Conservation Area Commission wetland
Sawyer Conservation 5 Main St. no formal pathways,
Conservation Area Commission wetland
Unkety Brook Conservation 73.09 Pleasant and no formal pathways
Open Space Commission Kemp Streets wildlife habitat
Urqhart Conservation 4 off Main St. backland, behind Sargent
Conservation Area Commission Cons. Area
Gage Town Forest Town Forest Com. 34 off Hardy St. backland
Pierce Town Forest Town Forest 131 Groton St. woods roads unsuitable
Committee for disabled access (used by
logging trucks and off-road vehicles)
Hauk Swamp Town 6 Depot St. wetland

Appendix B Minutes of Planning Meetings

Community Needs

The Conservation Commission passed out/collected a community survey to determine the community needs with open space and recreation.

Appendix C Record of Accomplishments, Analysis of Surveys, Conservation Matrix

1976 Dunstable Open Space and Recreation Master Plan Implementation,
Record of Accomplishments Since 1976 3 pages
Analysis of Community Surveys Done in 1975 and 1990 2 pages
Proposed Conservation Priority Matrix 2 pages

Analysis of Community Surveys Done in 1975, 1990 & 2010

Themes in Common

Some common concerns were expressed in all surveys: support for greenways (land adjoining streams, particularly Salmon and Unkety Brooks); protection for the town center and historic sites; support for strong zoning. There was increasing concern for agricultural protection, perhaps due to losses of farmland over the past 20 years. In 1975, zoning and subdivision control were the preferred approaches for protecting natural areas. In 1990, stronger support for open space acquisition was expressed. To back up their support, 1990 respondents expressed strong willingness to fund acquisition with their tax dollars. Since the enactment of the Community Preservation Act, the town has supported purchasing conservation properties for passive recreational needs. Swimming, the most popular activity in 1975, is still warranted, however, not as easily accessible as it was years ago. Walking/hiking and bicycling were in the top 3 activities in all surveys; organized sports also ranks very high.

1975, 1990, 2010

Surveys sent out 1975: 450 (Approximately one to each household)
Surveys returned 1975: 149 Response rate: 33%
Surveys sent out 1990: 725
Surveys returned 1990: 201 Response rate: 28%
Surveys sent out 2010: 1100
Surveys returned 2010: 44 Response rate: 4%
The lack of responses for the Open Space and Recreation survey was surprising to the Commission. Surveys were hand delivered in the Annual Town Report and residents were asked to return them a week later at the Annual Town Meeting. Residents were also given the option to drop them off at the Town Hall or mail them back to the Commission. A few weeks later, a notice was posted in the local paper (Neighbor to Neighbor) asking residents to please return the surveys. Only 4% responded.

1975 Conservation/Recreation Survey: Summary of Answers
What types of areas are most important for the Conservation Commission to acquire or protect?
Wildlife habitats 77% Farmlands 53%
Woodland 66% Wetlands 52%
Land adjoining streams and ponds 60%
What specific areas of Dunstable deserve special priority for protection?
Massapoag Pond shoreline 73% Unkety Brook watershed 52%
Salmon Brook watershed 69% Historical areas 51%
Dunstable Center 61%
What approach should the town use in protecting natural areas?
Zoning and subdivision control 83% Purchase of protective easements 60%
Wetlands protection ordinances 70%
Town purchase with reimbursement from state and federal sources 68%
What uses should be emphasized for existing or future conservation land?
Manage as wildlife refuges, nature study areas, and for scenic enjoyment 67%
Develop trail systems for hiking, horseback riding, cross-country skiing 55%
Develop active recreational uses (swimming, ballfields, tennis) 38%
The most popular recreational activities, ranked by number of annual days of participation:
Swimming: 7,146 days Walking: 6,307 days Bicycling: 4,578 days Horseback riding: 3,612 days Pleasure driving: 3,413 days

1990 Rural Land Preservation Survey: Summary of Answers
Rank the three most important reasons for living in Dunstable:
Dunstable's natural features: 82% Town's rural character: 68% Proximity to Route 3: 29%
Land uses that should be encouraged or allowed:
Agriculture 93%
Protect riverfronts with greenway 93% (Nashua River, Salmon Brook, Unkety Brook)
Single family residence 91%
Senior citizen housing 78%
Keep town center as it is 77%
Guest House/ Bed & Breakfast 67%
Various sized houses in new developments 60%
Nearby convenience store 58%
Require phasing for major developments 53%
Land uses that should not be allowed:
Two or 3 family houses in new developments 83% Restaurants, retail shops 64%
Services (laundry, bank, etc.) 73% Commercial development outside of business district 62%
Basic needs store (groceries, clothing) 72%
Three most serious problems facing Dunstable in the next 5 years:
Loss of rural character: 55% Solid waste disposal: 47% Tax increases: 27%
Should Dunstable be acquiring open space for the following purposes?
Preserve groundwater resources 90% agree Preserve unique scenic areas 81% agree

Preserve rural character 86% agree Preserve agricultural areas 80% agree
Preserve historic sites 85% agree For passive recreation purposes 73% agree
Are you willing to spend your tax dollars to protect these resources?
Yes 79% No 11% No answer 10%
Would you support a real estate transfer tax paid by the buyer to support open space protection?
Yes 66% No 21% No answer 13%
The following recreational activities were ranked as Important by more than half the respondents:
Walking 83% Running 72% Canoeing 67% Horseback riding 60%
Biking 73% Birdwatching 71% Cross-country skiing 63%
Organized athletics 73% Ice skating 68% Swimming 62%
Tennis was ranked Important by 49%, Not Important by 25%, and 16% were unsure.
ATV's were ranked Not Important by 69%; snowmobiling was ranked Not Important by 63%.
Present zoning bylaws: Need strengthening: 44% Are about right: 26% Don't know: 18%
Are too restrictive: 8%

2010 Open Space and Recreation Survey: Summary of Answers

Most residents that responded have: lived in town over 21 years.
have either 2 or 4 members of their family, are 41-60 years of age and visit conservation property weekly or a few times a year.

Of most importance to residents:
- Preserving & enhancing lands surrounding water supplies, wells & aquifers
- Preserving rivers, ponds, streams and wetlands.
- Preserving scenic areas and views
- Providing access to open space land and trails.

Residents feel Dunstable has an adequate number of:
- Playing fields
- Playgrounds
- Hiking/walking trails

Most important facilities that residents would like to see the Town build:
- Public access for swimming/boating/town beach
- Outdoor ice skating rink
- Dog exercise area

50% felt the town should continue to acquire land for conservation purposes
35% felt the town should continue to acquire land for recreation purposes
Most residents would like to see maps of the conservation areas.

Residents felt that in order to preserve land in Dunstable, they would be willing to:
- Vote for Town supported land acquisition if it means not raising taxes.
- Continue the Community Preservation Act after 5 years with a maximum 3% surcharge.
- 50% said they would be willing to donate money to purchase land.

Areas that residents feel are unique to Dunstable and in need of protection:
- Agricultural/farms
- Water bodies/wetlands

1998 DUNSTABLE OPEN SPACE AND RECREATION PLAN

Proposed Conservation Priority Matrix

This matrix can be used to rank land parcels, or portions of parcels, for their relative significance for conservation. It is intended to help indicate what Chapter lands should be priorities for conservation or Agricultural Preservation Restrictions if they become available. The matrix can be applied to any site with conservation potential. Theoretically, a parcel could score 100 points if all criteria occur significantly on site and it qualified for extra points by being on Route 113 east of the town center, or in the aquifer near the town wellfield, or on one of the named water bodies. Massapoag Pond is included under Salmon Brook as qualifying for extra points. These particular places are assigned extra points because they were specifically named as important for conservation in the input to the Open Space Plan.
Points for each column: Significant on site = 5 points Portion of site = 3 points Not on site = 0

SIGNIFICANT PORTION NOT CONSERVATION CRITERIA ON SITE OF SITE ON SITE

Human Elements
Scenic rural landscape visible from town road (5 extra points for Route 113)
Recreational Potential for swimming
Recreational Potential for trails
Recreational Potential for field sports
Recreational Potential for fishing/boating
Historic site

Water Resources
Aquifer (5 extra points for proximity to town wellfield)
Water body (5 extra points for Salmon, Unkety, Black Brooks, or Nashua River)
Wetland
Floodplain

SIGNIFICANT PORTION NOT CONSERVATION CRITERIA ON SITE OF SITE ON SITE

Subtotal from other side

Wildlife Habitat
State-listed rare species
Diversity of habitat types
Unusual habitat type

Land Use Capability
Prime and/or Important Farmland Soil (Middlesex County Soil Survey)
Prime Forest Land Classification (Univ. of Mass. Dept. of Forestry)
Actively managed for farm/forest

Parcel Configuration and Location
Abuts existing conservation land
Hilltop or hillside topography

Large block of undeveloped land

Total Points for Site (unable to determine points at this point)

Appendix D Other Documentation

Letter from Russell Cohen, Rivers Advocate with Massachusetts Riverways Program, regarding Salmon Brook, April 22, 1996
List of Historic Sites in Dunstable, from 1976 Plan 3 pages

Accomplishments:

Acquired Horsehill/Woods parcel – 40 acres (DRLT)
Acquired Tully Hollis/Fletcher parcel – 50 acres (DRLT)
Acquired Tully River St. parcel – 11.50 acres (DRLT)
Purchased Amos Kendall Conservation Area – High Street – 25.157 acres
Purchased Flat Rock Hill Conservation Area – Mill Street – 148 acres
Purchased Howard's Brook Conservation Area – Hardy Street – 10.89 acres
Acquired Stoddard Conservation Land & CR – Main Street/Fletcher – 32.01 acres
Hardman CR – Main Street – 14.33 acres
Sears CR – High Street – 15 acres
Community Preservation Act passed with 3% surcharge
Agricultural Commission established
Water Use Restriction Bylaw implemented
Right to Farm Bylaw adopted
Wetlands Bylaw amended
Water Supply Protection Bylaw adopted
Demolition Delay Bylaw adopted
Monday hikes led by people familiar with areas
Playground at Larter Field installed
Cleared scenic Blanchard Hill
Cleared Stone Arch Bridge road
Eagle Scout project: 25 bat houses built and installed on Conservation properties
Eagle Scout project: trail mapping of Town Forest and Unkety Woods Preserve